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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Puerperal Fever.*[a] By EDWARD WILLIAM MURPHY, A. M., M. D., Professor of Midwifery, University College, London.

PUERPERAL fever has been so frequently the object of medical inquiry, has excited so much controversy, called forth so many monographs, and has baffled so completely the elaborate researches of eminent members of our profession, that one feels no little hesitation in entering upon such a subject. This malady might well have been suffered to remain among the arcana of medical science, were it not that it holds an intimate relation to those sanitary questions which at present so much occupy public attention. For this reason I have ventured again to bring it forward; and if I fail in throwing any new light upon questions connected with this frightful disease, I must only ask some indulgence, which will be, perhaps, the more readily granted, inasmuch as so many of my predecessors have been in a like predicament.

Locke, in his Essay on the Human Understanding, when treating of the use of words, and the necessity of strictness in

[a] Read before the Epidemiological Society.

their application, relates an anecdote in illustration of his argument. He was present when three other physicians were engaged in a warm controversy on the animal spirits (the circulation of the blood was not then acknowledged). In the heat of the dispute, Locke ventured to ask what they meant by "the animal spirits." None could define the terms which they so freely used. Locke thought it would be as well to agree upon what we mean by a term before we argue about it. So it is with puerperal fever. It is very necessary to define what we mean by this expression before we discuss the important questions connected with it, which is the more essential because there is a complete contradiction in the terms used to signify this disease. Some authors adhere to the term "puerperal fever," and describe every form, from the simple inflammatory to the typhoid or asthenic fever. Others discard this expression completely, and consider it to be an inflammation affecting different tissues; hence the names, "puerperal peritonitis," "puerperal phlebitis," "puerperal arthritis," &c. It is obviously important to determine this preliminary question, because our knowledge of the correct principles of treatment depends very much upon a clear notion of the disease we are endeavouring to subdue. Have we to treat a fever, or to combat an inflammation? Are we quite sure that either of these terms conveys an idea correctly of the essential characters of what might be, perhaps, called, more consistently with facts, the puerperal plague? In order to arrive at a just conclusion, we shall endeavour to prove, by a process of negation, what, at least, puerperal fever is not, although we cannot promise to succeed in establishing the affirmative, and proving what this disease really is.

First, then, we deny the correctness of the term, "puerperal peritonitis," and feel assured that by applying it to this disease we fall into some very serious mistakes.

Peritonitis is not a disease which can *seipso* be communicated; puerperal fever can. Hence, by calling this disorder by a wrong name, our attention is drawn away from its most dangerous—its contagious character. We speak of it as peritonitis: nor is it until we find the peritonitis spreading from patient to patient that we take alarm, and at length discover that we are treating a different disorder. It is treated as peritonitis, and the result proves that our treatment has not the slightest effect. This error also causes great confusion in sanitary reports. Puerperal fever may prevail in a locality where the name is never heard. The Registrar-General tabulates deaths under the heads, "peritonitis," "phlebitis," "arthritis," &c. &c. The proportion of these inflammations is

thus increased at the expense of this malady, and his returns are deranged.

Puerperal fever does not agree with peritonitis either in the mode of its attack, in its symptoms, in its morbid appearances, or in the influence of remedial agents upon it. Inflammation of the peritoneum can generally be traced to some obvious cause. If after severe labour, inflammation, which commenced in the passages, may extend to the uterus, and thence to the peritoneum; or perhaps the uterus may become inflamed in its reaction, after the refrigeration and other means necessary to control violent flooding; hence peritonitis, or rather, metro-peritonitis.

But when we find peritonitis appearing quite suddenly, after, perhaps, a perfectly easy labour, when the most careful attention has been given to the patient, and no possible cause to excite it exists,—when the inflammation advances with a rapidity and an intensity almost incomprehensible, the conclusion is obvious, that the nature of the complaint is something more than inflammation; the mode of its attack betrays an obvious difference.

The symptoms in parallel cases are not the same. Peritonitis commences in the neighbourhood of the uterus; the pain is first felt there. The pain in puerperal fever frequently commences in the epigastrium, and the diaphragm may be the first engaged; violent stitches through the ribs are often one of its earliest symptoms, and precede distention of the abdomen. Headach is not a symptom of peritonitis; it is constantly met with in puerpural fever. The most remarkable difference, however, may be observed in the effect produced on the digestive organs. In peritonitis the action of the bowels is suspended; constipation is the result, and often so obstinate as to resist very powerful purgatives. A violent diarrhœa is frequently the first symptom of puerperal fever. Vomiting may occur in both; but, like diarrhœa, may be a first and most urgent symptom in puerperal fever, which is never the case in inflammation of the peritoneum.

When this scourge is in its maximum of intensity, we are not left to such distinctions as these to determine its nature, because, in some of the very worst cases, there is no symptom of peritonitis at all. A case has fallen under my notice, in which the abdomen was perfectly soft, free from pain on pressure, and not the slightest symptom of inflammation in the peritoneum or anywhere else; yet this patient was so completely under the influence of this fever, that she died in twelve hours from the first symptom of the attack, and after death the usual

sero-purulent effusion was met with in the abdomen. The intestines were covered with the creamy exudation commonly observed.

The *post-mortem appearances* do not agree with those which are the result of pure peritonitis. It is necessary, however, to recollect, the same caution is necessary in determining the *nature* of a disease by post-mortem appearances ; it is sometimes forgotten that these changes are *the results* of the disease, not the disease itself ; that their presence or absence do not of necessity prove the presence or absence of their supposed cause, and that identity of effect by no means proves one and the same cause. Adhesive lymph, and consequent union of parts, are considered as the results of inflammation ; we are now, however, on the way to discover that these changes may take place without any inflammation. In the very worst forms of puerperal fever, death has taken place without any morbid change in the abdomen, unless, indeed, great distention of the veins be considered as such. In other cases, as in that alluded to, the usual morbid appearances are observed, and yet no corresponding symptoms of inflammation; and again, there are cases in which adhesive lymph, the result of inflammation, and non-plastic lymph, the result of this fever, are so mixed up as to cause great confusion in determining the disease. Patients who have died suddenly of ruptured uterus afforded me the opportunity of witnessing the morbid appearances caused by peritonitis in its first and most active stage, and before their character was modified by those changes which result from the gradual exhaustion of the powers of life. They were nearly as follows :—

A moderate quantity of bloody serum filled the abdomen; the intestines were united to each other and to the uterus by an opaque glutinous medium; when separated, this was drawn out into strings, like glue, the true lymph of inflammation. The intestines were streaked here and there by florid lines of capillaries, and the general appearance of the peritoneum was opaque, having lost its shining character; the intestines were distended with air. If such appearances be compared with those constantly observed in puerperal fever, some doubt may perhaps arise that peritonitis and puerperal fever are one and the same disease. When the abdomen is opened, an immense quantity of lactescent fluid escapes ; the intestines are fringed with a cream-coloured exudation, which collects in the angles formed by their folds. This substance dissolves into a fluid like pus. The same exudation is found covering the uterus, the liver, the spleen ; nor is it confined to the peritoneum, hav-

ing been observed sometimes also in the pleura. The intestines present a livid appearance, traversed by dusky red lines of capillaries, very different from their florid aspect in peritonitis. This creamy exudation is not in the least adhesive, but can be peeled off the intestines quite easily, leaving a dusky livid surface. The only points of agreement in the post-mortem appearances are, the absence of a glossy surface, and the presence of tympanitis.

The distinction pointed out between the post-mortem appearances of puerperal fever and peritonitis is open to the objection that there are certain cases of acknowledged peritonitis which present precisely the characters which have been ascribed to puerperal fever; there is the same lactescent fluid, &c., &c. This may be true; but it may be asked, At what stage of the inflammation was the examination made ? because, if made, as is generally the case, in the second stage, when the patient sinks under the attack, and death does not carry her off in the middle of it, as in ruptured uterus, these appearances may be rather evidences of exhausted power than of inflammation, and thus agree with those produced by puerperal fever ; but there is this essential difference, that in the latter this effect is observed *ab initio* in patients who have at once succumbed to the attack, without any evidence of inflammation ; in the former, it is only when the constitution gives way in a manifest struggle, well marked by symptoms. In peritonitis there is always adhesive lymph; in puerperal fever frequently nothing of the kind.

The most important difference, however, between these diseases and that which, perhaps, the most concerns us, is the effect of treatment. Let us take, for example, the most popular remedies for inflammation of the peritoneum,—depletion, mercury, opium.

Depletion in puerperal fever is a much disputed question. Some are the warm advocates, others the equally zealous opponents, of the practice, but it is worthy of notice that, in this controversy, those who applaud depletion recommend twenty, thirty, even fifty ounces of blood to be taken,—a quantity which would be fatal in peritonitis, inasmuch as in some of the severer forms of this inflammation we cannot bleed at all.

Peritonitis arising from the escape of fæcal matter into the intestines—from the bursting of an abcess into the peritoneal cavity—from ruptured uterus, or if it should follow the operation of paracentesis in debilitated subjects—will not admit of depletion, because of the depressing influence of the constitutional shock; but in parallel cases of puerperal fever, in which

the powers of life are equally prostrate, Mackintosh recommends a large bloodletting, and in order to adapt his theory to his facts, he calls this condition "*latent peritonitis*,"—peritonitis without its symptoms! This inflammation has laid prostrate the powers of the constitution, and depletion, by subduing it, restores them. Such is the theory, but it is obvious that when peritonitis has such an effect, depletion is impossible, and, therefore, we must seek some other explanation of its reported success in the cases quoted by Mackintosh. That which we would suggest is, that the principle upon which depletion is beneficial in puerperal fever is different from that in peritonitis, because they are different diseases.

Mercury is a remedy commonly used to control peritonitis. I have found it perfectly useless in the treatment of puerperal fever; my experience is confirmed by Drs. Collins and M'Clintock, both of whom tried it extensively in the Dublin Lying-in Hospital. Dr. Collins remarks:—"It is supposed by some practitioners that when we can get the system under the influence of mercury, recovery is certain. This is not the fact, as I have seen in several cases in which death took place under these circumstances"[a]. In his valuable account of the recent epidemic in the Dublin Lying-in Hospital, Dr. M'Clintock observes, that "mercury was tried in a large proportion of cases, and in various doses, but I cannot say that I ever observed any decided improvement to have been traceable to its specific action on the system. In some cases the disease progressed with such frightful rapidity that absolutely there was no time for the drug to make an impression on the constitution; in other cases mercury seemed to produce diarrhœa, and had, therefore, to be laid aside; in two cases death occurred, notwithstanding that ptyalism had been excited"[b].

Opium is most valuable in that form of peritonitis in which depletion cannot be employed. It is probable that in such cases it acts as a stimulant, and restores nervous energy, impaired by shock, to the constitution. It may have a similar effect in puerperal fever, but opium alone is never sufficient; other agents are combined with it, and with this object *camphor* has been given in very large doses. Dr. Copland has given eight and sixteen grains of camphor combined with opium for a dose.

If this comparison between puerperal fever and peritonitis

[a] Collins' Report, p. 396.

[b] Report of the late Epidemic, 1855, by Dr. M'Clintock, Dublin Quarterly Medical Journal, vol. xix. p. 461.

proves that there is an observable difference in the manner of the attack, the symptoms, in the post-mortem appearances, and the effect of remedies, it follows that it is incorrect to call them by the same name. Designating this plague by the gentler epithet, "peritonitis," becomes a most dangerous misnomer, which we regret to observe so very generally employed.

Acute uterine phlebitis resembles puerperal fever much more nearly than peritonitis, because both are blood diseases; hence it is much more difficult to draw an accurate line of distinction between them, yet it seems to me quite possible. Inflammation of the uterine veins is described as a disease of frequent occurrence; I believe it, on the contrary, extremely rare, because the uterine veins are not easily susceptible of inflammation. If such were the case, uterine phlebitis would be the natural consequence of every severe labour, especially in cases where the child perishes and becomes putrid.

The putrid *débris* of the placenta, pus and such like irritants, would soon light up inflammation in these veins, if they were so irritable as is supposed. The uterine differ from other veins in this respect: they consist only of a lining membrane, which is acknowledged by the most eminent pathologists to be scarcely susceptible of inflammation. In other veins its seat is in the cellular and fibrous, not the lining, coats. Hasse remarks:—"In this respect it will appear not unworthy of notice that those portions of the venous system, which are composed exclusively of the internal membrane of veins, with a very scanty provision of the surrounding cellular tissue—like the corpora spongiosa—*are very rarely, and never extensively, the seat of true inflammation*"[a].

I have witnessed numerous cases of puerperal fever in which the uterine veins were chiefly engaged, but very seldom indeed have I met with cases of true uterine phlebitis. The history of one case will serve to illustrate the rest. Some years ago I was called to a case of violent flooding in Tottenham Court Road, refrigeration was employed, with other means, to arrest the discharge. The following day the patient complained of headach, and had a severe rigor; on the third the tongue was dry and furred; pulse 120. On the fourth it was almost black with sordes; skin burning hot, and jaundiced; pulse 140; no secretion of milk; partial sweats broke out all over the surface, and she was delirious. The treatment pursued gradually subdued these symptoms, but as

[a] Hasse's Pathological Anatomy, p. 11.

she was recovering, she complained of a great pain in the left leg; a swelling was observed in the neighbourhood of the gastrocnemius muscle, which soon increased, and became extremely painful. It was evident that a deep-seated abscess had formed; this was opened, a large quantity of pus was discharged, and she recovered.

This case may be compared with one related by Dr. M'Clintock in his valuable Report of the recent epidemic in the Dublin Lying-in Hospital. It is described thus:—

"Natural labour; phlebitis; arthritis; death.—B. K. was delivered of her second child, after a short and easy labour, on December 18, 1854. The fœtus was small, about the eighth month, hydrocephalic, and *very putrid.* At the moment of its expulsion a quantity of abominably fœtid gas was remarked to escape from the vagina. On the second day she had some slight tenderness over the uterus, without any acceleration of pulse, however. This was removed by a turpentine stupe, and a dose of castor-oil and turpentine.

"*She was very well on the third and fourth days:* the pulse being only 88, and no uneasiness whatever in the uterus. Still, there was but a very scanty secretion of milk, and the tongue was somewhat dry towards its base in the median line. On the fifth day the pulse was 100, but she had no uterine uneasiness of any description, and expressed loud murmurs at not being allowed up. The next day brought no change in her condition, and on the day following she was worse; pulse 110; tongue dry and glazed; no abdominal pain or distress, but complains of a severe pain in the great toe. On examining this, the metatarso-phalangeal joint was found swollen, and the integument of a shining bright red. On moving the toe or pressing the joint, she evinced pain. She only lived to the morning of the eleventh day, notwithstanding that she got wine and brandy freely. For six hours before she died the pulse had entirely ceased in the arms, and the hands were red and cold, *yet she retained entire consciousness,* was fully and acutely alive to all passing around her, and able to move and turn in the bed without any assistance. There was a sort of quickness and excitability in the woman's manner during the last few days of her illness, that is the nearest thing that I have seen to the 'hysteroid excitement' described by Professor Meigs as being a very characteristic attendant upon uterine phlebitis. *This patient had no rigor*"[a].

[a] Account of the recent Epidemic in the Dublin Lying-in Hospital, by Alfred M'Clintock, M. D., as above cited.

The absence of rigor and the presence of the hysteroidal excitement of Meigs seem to me rather to negative phlebitis.

This perfect consciousness on the verge of dissolution, the clear intellect of the patient, and her extraordinary power of motion almost in her last moments, her sense of security, and belief in her recovery just before death, are all characteristics of puerperal fever, but not of phlebitis. In order, however, to place the question in a clearer light, I shall briefly quote the symptoms of phlebitis as given by Mr. Arnott in his valuable paper on this subject:—

"The patient has great restlessness and anxiety; prostration of strength and depression of spirits; sense of weight at the præcordia; frequent sighing, or rather moaning, with paroxysms of oppressed and hurried breathing, the patient being unable at the same time to refer his sufferings to any specific source; the common symptoms of fever are present; the pulse rapid, reaching 130 or 140 in the minute, but in other respects extremely variable; *frequent and severe rigors almost invariably occur;* the general irritability and deep anxiety of countenance increase; the manner is quick; the look occasionally wild and distracted. When left to himself, the patient is apt to mutter incoherently, but, on being directly addressed, becomes clear and collected; the features are shrunk, and the skin of the whole body assumes a sallow or yellow colour. Under symptoms of increasing debility, and at a time when the local affection may appear to be in a great degree subsiding, secondary inflammation of a violent character, and quickly terminating in an effusion of pus or lymph, very frequently takes place in situations remote from the original injury. The cellular substance, the joints, the eye, have been affected, but it is more particularly under a rapidly developed attack of inflammation of the viscera of the chest that the fatal issue usually occurs. Whether this be observed or not, death is *always preceded by symptoms of extreme exhaustion; a rapid, feeble pulse; dry, brown, or black tongue; teeth and lips covered with sordes; haggard countenance; low delirium*"[a]. This is very different from the hysteroid excitement of Meigs, which cannot be considered as diagnostic of uterine phlebitis, unless, indeed, it be assumed that inflammation of the veins of the womb is quite a different disease from inflammation of veins elsewhere. We have given evidence, however, to prove that it is not so, but is, in its leading characters, exactly similar. Dr. M'Clintock's

[a] Medico-Chirurgical Transactions, vol. xv. p. 52.

case is one of blood-poisoning, probably from putrid animal matter; the child was putrid, the discharges from the vagina most offensive; nevertheless she seems to have nearly escaped, because no symptom manifested itself until the fourth day, and then gradually the pulse rose, the tongue became dry, the metatarso-pharyngeal joint swollen, shining red, and painful; depositions of pus, the result of depraved blood, took place in this joint, and the woman might have recovered but that she was in an atmosphere of puerperal fever. It may be considered, therefore, a case of puerperal fever.

There is a very close analogy between the poison of putrid animal matter and that of puerperal fever. The effluvia of Montfaucon and its effects are well known. The Maternité is near to this abattoir, and the presence of puerperal fever or its absence from that hospital seems almost to depend upon the way the wind blows: if from Montfaucon, there is fever; if towards it, the hospital escapes. This fact shows the alliance between the effluvia of putrid meat and the poison of puerperal fever. Another fact, of which I have had painful personal experience, points to the same conclusion. In the winter of 1842 I was called to see a woman in severe labour; inflammation of the uterus was just commencing; the child was dead, the bones of the cranium loose; the head was perforated, and the child with much difficulty extracted. In two hours after, I was again sent for, in consequence of the placenta being retained; it was adherent. In order to extract it, the right hand was first introduced, then the left, and after some trouble it was brought away, quite putrid.

On the day following some pimples appeared on both arms, which soon formed into pustules, one of them assuming, on the fourth day, a very unfavourable aspect. It was surrounded by a deeply livid base. Mr. Liston cut the pustules through, cauterized, and dressed them with water-dressings. This prompt treatment prevented any subsequent mischief. Exactly at the time that these pimples first appeared, symptoms of puerperal fever were noticed in this patient, of which she died on the fourth day.

This case affords clear evidence of the action of the poison of putrid animal matter, producing on my arm pustules of a malignant character, similar to what have been observed among the slaughterers in the south of France, and causing puerperal fever in this patient. Puerperal fever, however, is not an invariable result. A case which may strictly be considered as blood-poisoning from putrid animal matter is related by Mr.

M'Whinnie:—"A case of destructive ophthalmia, with extensive suppuration of the cellular membrane, and severe affection of the knee-joint, occurring after premature delivery."

"In the spring of 1847 Mr. F. Huchison, of Farringdon-street, requested Mr. M'Whinnie to visit Mrs. M., a lady about 40, of spare habit of body, but strong constitution, and active mind. She had been delivered (March 7) of a four-months' child, which had been for some time dead in the uterus, and it was believed that the system was contaminated by the retention of the decomposed fœtus. Much serious indisposition and constitutional disturbance preceded and followed the expulsion of the fœtus. On the second or third day after delivery, the contents of the right orbit became inflamed; we found the globe much more prominent than that of the other eye, and it was apprehended that an abscess might be forming behind the organ. . . . . On the 28th Dr. Fred. Farre visited the patient, and gives the following account of the affected eye. . . . 'The lids were much swollen and closed; considerable rednesss and chemosis of the conjunctiva, but no suppuration. The cornea was prominent, but rather nebulous; the anterior chamber greatly enlarged; the iris, yellow and disorganized from effused lymph, and inclining backwards, adhered to the capsule of the lens; the pupil was filled with the same effusion, vision was entirely gone.' . . . The right lower extremity became stiff and swollen; pitting on pressure, and accompanied by œdema of the foot and labium of that side. Collections of matter were also found in different parts of the limbs; at first principally in the vicinity of the knee-joint, and under the integuments of the back of each forearm above the wrist; that on the left was dispersed by blisters; the other subsiding spontaneously. The calf of the leg also became swollen and tense, and, fluctuation having been discovered, a large quantity of thick pus was evacuated by incision.

"The abscesses about the knee-joint and others in different parts of the limb were opened immediately on being detected; their contents consisting generally of well-formed pus; the integuments were not naturally discoloured. It was evident that the cellular, adipose, and intermuscular tissues were everywhere loaded with sero-purulent infiltration, presenting, when divided with the knife, a greenish-gray colour. On the 12th April the right knee-joint had become the seat of painful swelling from effusion into its cavity, and its several structures suffered from the effects of the most destructive inflammation. . . . An abscess was opened on the outer side of the joint, and

(April 22) Mr. Aston Key opened another above the internal condyle.

"May 23rd. The condition of the patient had now become most deplorable; she was reduced to extreme weakness and emaciation. In addition to her other ailments, she had cough and diarrhœa, and the integuments over the sacrum and in other parts subject to pressure became tender. . . . . After being some time on the hydrostatic bed, from which most essential advantage and comfort were immediately felt, it was ascertained that in consequence of the pelvis having sunk much below the level of the knee, a very considerable accumulation of matter had taken place, so as to form a projecting tumour on the upper part of the thigh. On dividing the fascia"—by a very skilful surgical operation—"an immense quantity of thick pus was discharged. . . . . From this time may be dated a steady and gradual improvement; the appetite, and with it the strength, increased; the discharge from the numerous and extensive abscesses diminished; the limb regained more of its proper outline, and the muscles their tone and power. The knee, still considerably bent, was in a more quiet condition; the eye, reduced to a third of its natural size, had receded to the back of the orbit; the external tissues had not ulcerated. All inflammation in the globe and surrounding structure having ceased, the former was speedily reduced, by the action of the absorbents, to the same dimensions as if the tumours had, as in other cases, escaped by ulceration of the cornea and sclerotica. Mrs. M. is now (Dec. 1847) strong and well"[a].

This case, although condensed, is given sufficiently at length to prove the true character of blood-poisoning, as distinguished both from phlebitis and puerperal fever. Had it been either of these, the complaint would have gone through its stages in as many days as this occupied weeks; besides that the presence of pus is by no means a proof of pre-existing inflammation. It is now admitted by surgical authorities that in these affections of the joints pus may be present without any inflammation. Mr. Coulson observes that in secondary diseases from blood-poisoning "the bones of the joints are never affected, and the joints often contain a quantity of pus, without any trace whatever of inflammation or other lesion."

If this fact be considered in connexion with another, proved by the able researches of Mr. Henry Lee, a just con-

[a] Medico-Chirurgical Transactions, vol. xxxi. p. 65.

clusion may be arrived at on this important point. In his paper on "The Deposition of Fibrine on the lining membrane of Veins," Mr. Lee has proved that the changes generally attributed to the walls of the vein really commence in the coagulum. The jugular vein of a donkey was tied, opened, and emptied of its blood between two ligatures, and filled with wadding: the wound was then closed. The animal was killed forty-eight hours afterwards, and the vein examined. *There was not the slightest trace of inflammation on the lining membrane of the vein between the ligatures.* The lining membrane here was of rather a deeper colour than natural; but in no point did it present any trace of effused lymph"[a]. Had blood been allowed to remain between the ligatures, lymph would have been found on the walls of the vein, clearly proving that this evidence of inflammation was derived from the blood itself, and not from the coats of the vessels. Hence the conclusion, that a coagulum may be formed in a vein, lymph thrown out, and even pus produced, without any previous inflammation in the vein itself. Healthy blood seems to possess this conservative power of securing itself against contamination. If pus be mixed with blood, coagulation instantly takes place; the coagulum becomes adherent to the sides of the veins, inflammation *follows*, and the pus is removed by abscess. If other morbid matters are injected, nearly similar results take place, which are thus described by Mr. Lee:—"If the proportion of morbid matter be large, the whole coagulum will rapidly soften, and present to the naked eye the appearance of pus more or less discoloured. But if the quantity which has become mixed with the blood be small, the coagulum will retain its consistency, and become adherent to the sides of the vessel. Under these circumstances the coagulum will adhere to one side only of the vessel, and, as it contracts, the diameter of the vessel will be restored to its original size. In other cases the outer layer of the coagulum will become adherent to the whole circumference of the vein, and the inner portions, which are always the least consistent, will become softened and broken down. A complete cylinder of fibrin may, in this way, be formed in the interior of a vein, through which (when the fluid portions of the coagulum are removed) the blood will circulate. It is worthy of remark that when plugs of fibrin are thus formed, the adjacent lining membrane of the veins is coloured in exact proportion to the quantity of colouring matter contained in the coagula"[b]. "The opi-

[a] Pathological and Surgical Observations, by Henry Lee, p. 99.
[b] *Op. cit.*, p. 101.

nion that the material found in obstructed veins is derived directly from the blood, is further supported by the fact, that where a coagulum is formed and becomes incorporated with the coats of a vein in one part, the lining membrane of the vessel in its immediate neighbourhood may, nevertheless, present its natural shining appearance[a].

Such are the results of pus or other irritants on healthy blood; but if that irritant be a poison, this conservative force may be completely impaired: the circulation goes on imperfectly, the slightest cause producing stagnation; the blood readily dissolves into pus, which is scarcely circumscribed by the feeble effort at inflammation, and hence large collections of matter are found in almost every tissue where it can form a resting-place. Thus pus, or what is called pus, is found infiltrating the uterus, in the orbit, the joints, inter-muscular tissue, liver, and spleen, and all this without any pre-existing inflammation. Pus in this way produced did not escape the notice of Wedl. In speaking of exudations on the inner coats of veins, he remarks:—"The fact that pus in these cases may be formed from stagnant blood, and more especially from its serum, perhaps no longer admits of doubt, since the metamorphosis of the coagulated blood into a puriform fluid *may be traced from the centre of the plug towards its periphery*"[b]. He again states, speaking of the transition from leucœmia into pyœmia:—"In a well marked case of leucœmia with congestion of the lungs, greatly enlarged liver and spleen, the veins in the plexus choroideus of the brain were as completely filled with a purulent fluid as are the veins of the uterus, *in the affection erroneously termed uterine phlebitis*"[c]. On this point he further observes:—"This notion would accord with the fact that in what is termed phlebitis, the collections of pus coincide with a local stasis of the blood. The term 'phlebitis,' however, is improper, since there is no indication whatever of inflammation of the venous coats"[d]. The fact, then, that in cases of puerperal fever, pus may be found filling the uterine veins, forming abscesses in the orbit, joints, or elsewhere, is no satisfactory proof of uterine phlebitis. Such appearances seem to me dependent upon poisoned blood, not upon inflammation. The tendency of inflammation of the veins is to secure the circulation of pure blood; a poison destroys this power, and hence these effects of poisoned blood extend throughout the whole circulation, showing themselves wherever a stasis of

[a] *Op. cit.* p. 102.
[b] Wedl, Pathological Histology, p. 233.
[c] *Op. cit.*, p. 303.
[d] *Op. cit.*, p. 311.

the blood takes place. I am not disposed, therefore, to agree in the propriety of the term, "uterine phlebitis," as expressive of one of the forms of the disease called "puerperal fever;" and on the same principle object to the term "arthritis;" but in adopting the name, "puerperal fever," I do so because it is best understood, for the same reason that "Cholera Asiatica" expresses another plague, although the propriety of the expression might be questioned.

It remains to consider what this disease really is, and in what light it must be considered if we hope to lay down correct principles of treatment. In discussing this part of the question we can only point out the path that appears to lead towards the truth; if we cannot succeed in finding it, something, at least, is gained if we avoid wandering into error. We shall examine puerperal fever as the result of a morbid poison; its symptoms, as manifestations of its action; and think it will be found that in every respect it obeys those laws which the late Dr. Williams has so accurately demonstrated as common to all poisons.

Puerperal fever has a definite and specific action, and selects a tissue for its seat. We know that the action of arsenic is on the stomach, digitalis on the heart, opium and strychnia on the nerves; so also with morbid poisons,—the intestines are the tissues engaged by the typhus poison; the skin and cellular structure, by erysipelas; scarlet fever shows its action on the skin and mucous membrane; and, in obedience to the same law, the puerperal poison selects the serous surfaces and those which are analogous to them. The evidence of its action is found, not only in the peritoneum, but also in the pleura, arachnoid, veins, and synovial membranes. The peritoneum is most frequently engaged, because, after parturition, the most rapid absorption takes place there. This membrane during pregnancy had been gradually distended to its utmost, to keep pace with the enlarging uterus. After delivery, both return to their original dimensions, and consequently the absorbents are in the highest state of activity; the poison is at once taken up, and produces its effects on the peritoneum and uterine veins. What is that action? I am at once met by this question. Is it not inflammation, although of a specific, or, if you please, of a toxemic character? In order to give a correct answer to this query, it is very necessary to define this term, "inflammation." We must agree on what we mean by this expression, and the sense in which it should be understood, before we argue about its special forms; and here a difficulty at once presents itself, not from any want of words to express what it

is, but from the almost impossibility of getting rid of the confusion which has arisen from using the term too extensively and too loosely.

Inflammation is the term applied to every condition of the tissues where redness, swelling, heat, and pain are found in union ; nay, it has been applied to states where these four signs were absent, but in which, after death, certain morbid changes were found similar in appearance to those produced by inflammation. The effects were apparently the same, therefore the cause must be the same ; but inasmuch as there were no symptoms during life to justify the definition, the name "latent inflammation" became a convenient "*locus ignorantiæ.*"

The appearances presented by the lung of the infant at birth and in very early life often accurately resemble those caused by inflammation ; they have even received the names "lobar," "lobular," "vesicular pneumonia." We are indebted to the very simple experiment of Bailey and Legendre for proof that this was not pneumonia at all, but a perfectly opposite condition. They inflated the lungs with air, and immediately the so-called induration, hepatization, &c., &c., disappeared ; these supposed evidences of inflammation being caused by a partial collapse of the lung. It appears to me that similar latent inflammations might be disproved if they were capable of an equally easy and decisive experiment; but when these signs of inflammation are present, are they adequate proofs that inflammation is their cause? When, for instance, cancer is destroying the tissues, we find the changes in their structure accompanied by redness, swelling, heat, and pain. If, therefore, this must be called "*cancerous inflammation*," the expression is most illogical, because it is applied to a condition which has not one property in common with pure inflammation. They are perfectly opposed; and to call things totally different by the same name, as being only varieties of the same thing, is contrary to all rules of just reasoning. The tendency of cancer is to destroy; that of inflammation, to preserve organized structure. The one is a disintegrating process, eating away the tissues; the other, a conservative effort to repair or to prevent an injury to them. If we reflect for an instant on what takes place when any of the tissues are broken or injured, we shall arrive at a clearer idea of what inflammation really is. If a wound be inflicted on a limb, blood is effused, a coagulum is formed, and through this medium the wound may be healed without any inflammation, provided all accidental causes which may interfere with the "*first intention*" of nature are removed. If this fail—and it generally does so—inflammation takes place,

lymph called organizable is poured out, pus is secreted, granulations are formed, all having the same object, to protect the injured tissues from causes of irritation. In this process of repair, the irritated capillaries dilate, become gorged with blood, that circulates with difficulty, oscillates, remains stationary, and resolves into its elements, which are exuded—as serum infiltrating the tissues—as fibrin, which is adhesive, and capable of forming new structures ; granulations may be formed, and pus secreted, to protect the exposed surface; these gradually contract as new tissue is developed, until ultimately the injury is repaired. The whole of these phenomena have a conservative design, and constitute what we mean by inflammation.

In attempting a definition, therefore, I should prefer such terms as express the object of inflammation rather than those applied to external signs, which it has in common with morbid actions of a precisely opposite character. In this sense, inflammation may be considered as *a local determination of blood, followed by exudation of its elements, an accidental result of the effort of nature to repair an injury or to restore a function.* Such a definition will perfectly apply to simple inflammation, and may also include specific inflammations, if we understand by them the effort to limit the action of a poison. Thus the deposition of tubercle may cause specific inflammation of the lung; the poison of syphilis, specific inflammation of the glans penis. In both cases the term 'inflammation' expresses a series of actions altogether different from and opposed to the action of the poison itself. The tendency of a poison is to destroy a tissue or to suspend a function ; that of inflammation is to preserve the one, and to maintain the other.

It is quite possible, however, that a conservative and destructive action may go on simultaneously, and give rise to external characters and morbid appearances well calculated to create confusion ; thus the error is often committed of naming the destructive action by a term expressing exactly the reverse. A man is poisoned by arsenic ; he is said to die of gastritis. Decomposed animal matter mixes with the blood, and acts as a poison ; the case is described as one of phlebitis : although in neither case do the symptoms agree with true inflammation of the stomach or of the veins. The viper-bite is accompanied with redness, swelling, heat, and pain ; nevertheless, the cause is so obvious, death is attributed correctly to the poison : but if the same result happen from a dissection wound, the patient is said to die of diffuse inflammation. Such

is the confusion which arises from including under the same name, 'inflammation,' morbid actions perfectly opposed, merely because they agree in presenting similar appearances. In speaking, therefore, of the action of the puerperal poison, we must discard the term specific 'inflammation' as designating that action. The distinction between this malady and true inflammation of the tissues engaged has been already pointed out; but, although an essential difference exists, nevertheless, an attempt to limit the action of the poison by inflammation may take place, and just as the deposition of tubercle on the peritoneum excites tubercular peritonitis, so the puerperal poison may cause puerperal peritonitis; but that inflammation is only secondary, and its prominence is inversely as the strength of the poison. The more powerful the poison, the less peritonitis; and the weaker its influence, the more distinctly are the evidences of inflammation observed.

The puerperal poison selects the serous membranes as the seat of its action; the action itself is on the blood. The quantity of fibrin is increased; the quality deteriorated. A profuse exudation of *morbid* fibrin takes place, which has none of the properties of healthy organizable lymph. It is not adhesive; it dissolves into a creamy substance, which, when fluid, resembles pus, and has been found abundantly in cases where there was not a single symptom of peritonitis. This poisoned fibrin has been found coating the uterus, the intestines, the spleen, the liver, without adhering to them. Creamy fringes border the mesentery; yellow, dissolved fibrin is met with in the folds of the intestines, looking like abscesses; the fluid mixing with the effused serum gives it a lactescent appearance, the "abundant milky serum" of authors. Exudations are not met with in the veins, because, not being adhesive, they are carried along by the circulation; but dissolved, purulent-looking fibrin is met with abundantly, not only in the open mouths of the sinuses, but throughout the uterus, giving it not unfrequently the appearance of a sponge filled with pus. Sometimes soft coagula close the sinuses; and occasionally, but very rarely, a vein may be closed by a firm plug of fibrin, just as true organizable lymph is sometimes met with in the peritoneum. In both instances they are evidences of a feeble and fruitless effort to limit the action of a poison.

The action of the puerperal seems a contrast to that of the typhus poison on the blood, because, while the former increases, the latter diminishes the quantity of fibrin; yet, if the typhus poison be absorbed by a puerperal patient, the result is

puerperal, not typhus, fever. It is the same with erysipelas, proving that animal poisons, each observing a distinct and definite law of action, may yet reciprocally excite each other.

The action of the poison is modified by the dose as well as by the temperament and constitution of the patient.

Puerperal fever selects its victims. In the same hospital and in the same ward it will not extend from bed to bed, but be found scattered in different directions. When from any cause nervous energy is impaired, the poison is freely absorbed. In hospitals seduced women are always an easy sacrifice; but, even among the affluent, powerful secret causes of mental depression may act with as much force, and expose them to its influence. Such causes are generally unknown to the physician, and he is puzzled and disheartened by the result; nevertheless, their existence is certain, and must always be appreciated.

The most important feature, however, of this law is the manner in which the characters of the disease are modified by the quantity of the poison absorbed. When it is in excess, the patient may die of puerperal fever, without any other symptom than a fluttering pulse, and cold, livid surface. Death takes place so rapidly that there is not time to set up the specific action of the poison. There is an absence of the usual symptoms called inflammatory, and sometimes also no morbid appearances. This is a well-known effect of poisons taken in extreme doses. Arsenic and oxalic acid have caused death without any alteration in the tissues of the stomach. Cholera and typhus have killed before their specific action was set up. Such cases of puerperal fever have been described by Mackintosh under the name of "*latent peritonitis;*" for which he recommended the largest depletion, to relieve, as it were, the incubus of the inflammation which was oppressing the powers of life.

On the other hand, the dose of poison may be so small, and its action so feeble, that true inflammation makes the effort to arrest it, and the case may really be peritonitis, arthritis, or phlebitis.

The contradictions in the opinions and treatment of authors may be explained if attention be given to this law. Those who witness the milder forms of the disease describe and treat it as a local inflammation, while those who witness the plague in its full intensity stand aghast at symptoms which no theory of inflammation could explain.

Dr. John Clark found it to be quite a different disease to any that he had been accustomed to meet. The first cases he quotes occurred in July, 1787: he was astonished to observe

the rapidity with which it ran its course, and the very extraordinary manner in which women were destroyed by it. Mr. Hey, of Leeds, observed the same difference:—"He was alarmed by the extreme rapidity with which the disease ran its course, and by its constant fatality, unlike anything which had ever been known in Leeds"[a]. "He thought it approached the nearest to Dr. John Clark's 'low fever of child-bed;' for although it differed from it in some respects, yet it resembled it in its general characters, and *differed far more widely from simple inflammation of the uterus and peritoneum*"[b].

Such is the experience of these highly practical authorities. Dr. John Clark states that the first cases attacked were the worst. The same fact came under my own notice while resident in the Dublin Lying-in-Hospital. When the plague first appeared, we could not save a patient, but afterwards it seemed to yield more to the treatment employed, as if at first the poison was concentrated, and in its maximum of intensity, which diminished as it became diffused. Puerperal fever also obeys *the law of incubation*; but it is difficult to determine the period accurately.

Two morbid poisons may coexist; this is not a law, but a well-known fact of some importance. Measles may be the companion of hooping-cough. Erysipelas and syphilis are found together, each poison exciting its specific action in the same person at the same time. It need not therefore create confusion, if erysipelas and puerperal fever are met with in the same patient; if we find extensive sloughs in the passages, and morbid fibrin in the peritoneum: but it appears to me, that erysipelas rather precedes and follows puerperal fever than accompanies it.

In the hospital where my experience of this disease had been most accurately formed, erysipelas preceded puerperal fever, disappeared when the latter was in its full power, and returned on its decline. Erysipelas was then prevalent in surgical hospitals, and it is probable that it was taken up by the passages when inflamed after a severe labour, and this poison excited that of puerperal fever.

If it be admitted that puerperal fever strictly obeys the laws of morbid poisons, and is therefore a toxemic disease, it must not be forgotten that one of those laws is,—that the action is *specific and definite;* because other forms of post-partum disease have been enumerated as puerperal fever, although the specific action was absent. Dr. Gooch, in his highly

[a] Hey on Puerperal Fever, p. 2. [b] *Op. cit.*, p. 10.

practical paper on Puerperal Fever, describes cases with quick pulse, tympanic and extremely tender abdomen, with great prostration, but in the post-mortem examinations of those who died, although "the intestines were found enormously distended with air, there was neither redness, adhesion, nor effusion of any kind;" the peritoneum was pale and colourless. Dr. Gooch calls this puerperal fever; I cannot perceive any of its true characters, but if we might assume that erysipelas may attack serous membranes, the difficulty might be removed. The coexistence of puerperal fever and erysipelas has led to the belief that these poisons were identical; each, however, observes its specific action; if, however, a serous membrane might be the seat of erysipelas, the fact would explain the tympanic and painful abdomen, the prostration, its epidemic character, and the absence of any traces of its existence after death, and further, might render intelligible, why patients were killed by depletion, and cured with Dover's powder, a medicine which has never yet succeeded in arresting true puerperal fever. Similar cases are related by Dr. Ferguson, and might be named much more correctly 'puerperoid' than puerperal fever.

The last question in reference to this part of the subject is the class of animal poisons to which puerperal fever should be referred. Whether is it a contagion like hooping-cough or measles, infectious like typhus, or epidemic like cholera? I confess myself a believer in the contagion of puerperal fever. Evidence has now accumulated of instances in which the plague has haunted some unfortunate practitioner from case to case, destroyed all his patients, and ruined his practice. We have also proof that a poison, if not the same, at least perfectly similar in its effects, is contagious. Dr. Routh brought before the profession, some years since, the valuable observations of Dr. Semelweiss on this disease, as observed in the Vienna Hospital[a].

It was there discovered that students coming from the dissecting-rooms communicated the fever to the lying-in women, and that the poison of decomposed animal matter, being brought *into contact* with the passages, produced the disease. The hand was the medium of communication, and the poison absorbed was either the puerperal poison, or called it into action. It is not unreasonable, therefore, to infer that it is a contagion. It is true, there are negative arguments against this opinion, derived from opposite facts. Contact in atten-

[a] Medico-Chirurgical Transactions, vol. xxxii.

dance on patients thus afflicted failed to communicate the disease to others; but negative arguments are always weak, and in this instance especially so, because it by no means follows, that if a poison be a contagion, it must always be communicated. If this were the case, measles, hooping-cough, and such like contagions, would become universal soon after they appeared in a district. We know that obstetric physicians go from lying-in hospitals into private practice without communicating this fever. Practitioners who meet with it in their circle of practice do not of necessity spread the disease, although there are some melancholy instances to the contrary. There are many causes, whether constitutional or accidental, which may promote or resist the absorption of a contagious poison. Plague is the most contagious of all poisons, and yet, even plague has been resisted. De Foe, in his Journal of the Plague, 1665, relates a remarkable instance, which is thus recorded in the quaint language of the time. He calls it—

"THE STORY OF THE PIPER.

"It is said he was a blind piper; but the fellow was not blind, but an ignorant, weak, poor man, and usually walked his rounds about ten a night and went piping along from door to door. The people usually took him in at public houses, where they knew him, and would give him drink and victuals, and sometimes farthings, and he in return would pipe and sing and talk simply, which diverted the people, and thus he lived. It was a very bad time for this diversion, while things were as I have told, yet the poor fellow went about as usual, but was almost starved, and when anybody asked him 'How he did?' he would answer:—'The dead cart had not taken him yet, but they had promised to call for him next week.'

"It happened one night that this poor fellow, whether somebody had given him too much drink or no . . . . was laid all along upon the top of a bulk or stall, and fast asleep at a door in the street, near London Wall, towards Cripplegate, and that, upon the same bulk or stall, the people of some house in the alley of which the house was the corner, hearing a bell which they always rang before the cart came up, laid a body really dead of the plague just by him, thinking, too, that the poor fellow had been a dead body as the other was, and laid there by some neighbours. Accordingly, when John Hayward with his bell and cart came along, finding two dead bodies lie upon the stall, they took them up with the instrument they used, and threw them into the cart, and all this while the piper slept soundly. From thence they passed along and took in

other dead bodies, till, as honest John Hayward told me, they almost buried him alive in the cart, yet all the while he slept soundly. At length the cart came to the place where the bodies were to be thrown into the ground, which, as I do remember, was at Mount-hill (Goswell-street), and the cart usually stopped some time before they were ready to shoot out the melancholy load they had in it.

"As soon as the cart stopped, the poor fellow awaked, and struggled a little to get his head out from among the dead bodies, when, raising himself up in the cart, he called out, 'Where am I?' This frighted the fellow who attended about the work, but after a pause, Hayward, recovering himself, said, 'Lord bless us, there is somebody in the cart not dead.' Another called to him, 'Who are you?' 'I am the poor piper.' 'Where are you?' says Hayward. 'Why, you are in the dead cart, and we are going to bury you.' 'But I aint dead, am I?' They lifted the poor fellow down, and he went about his business."

He did not take the plague, perhaps because he was drunk, and thus the most contagious of all poisons was resisted. Those occasional instances where contact fails to communicate puerperal fever are no proofs that it is not contagious.

The symptoms of this disease have been so accurately described by numerous authors, that it is only necessary to refer to such of them as will explain the principles of treatment. Every author has noticed varieties in the mode of its attack. Vomiting is sometimes the first symptom, or it may begin with diarrhœa; more frequently a rigor, followed by a violent shooting pain through the epigastrium, ushers in the attack, and this is followed by swelling and extreme tenderness of the abdomen. Lastly, there are cases more progressive, in which tenderness is first observed in the neighbourhood of the uterus, extends to the abdomen, is accompanied by a firm wiry pulse (never the case in the former instances), and presents many of the characters of true peritonitis; the bowels are constipated, and vomiting occurs at a later period.

The manner in which the constitution is first affected by this poison is of importance as a guide to treatment. Douleet thus discovered the value of emetics. He observed in his cases, that vomiting was a first and most urgent symptom, and, so far from checking this, he sought means to promote what appeared to him a natural effort to throw off the disease. His ipecacuanha emetics had the most marked success. The same treatment was tried by others, and failed altogether, because the epidemic was of a different character.

Gordon, Hey, Armstrong, and Mackintosh, observed in their cases a rigor followed by the greatest prostration; nevertheless, they boldly employed the largest depletion, and saved their patients. Gooch met with cases of a different kind, in which true peritonitis was a more prominent feature; he found a more moderate bloodletting, together with local depletion, equally serviceable; and lastly describes another subsequent epidemic, in which bleeding killed his patients. This difference can only be explained by assuming a difference in the manner of the attack. Gordon's cases differed from Gooch's in the extent to which the poison was absorbed; while the cases in Gooch's first and second epidemic differ from each other so completely, as to lead to the doubt whether the latter was puerperal fever at all.

This difference in the mode of attack will perhaps also explain the cause of success in the various remedies employed, each of them claiming the most marked success, and each of them quite different in their actions. The moment this poison is absorbed, an effort is made to get rid of it through the ordinary channels: hence the vomiting and purging; the effort generally fails, and poisoned blood accumulates at the centres of the circulation, causing a rigor of greater or less severity. The skin, and I believe also the kidneys are excited to remove the poison from the blood. The practitioner who aids this effort succeeds: thus, Doulcet succeeded with ipecacuanha; Denman with tartar emetic; Boer with Kermes' mineral; Armstrong with salts and senna. I have been informed also of the value of nitrate of potash as a diuretic in some forms of this malady; but when the effort failed, and a rigor gave evidence of the accumulation of poisoned blood at the central vessels, Gordon and Hey relieved this at once by taking twenty or thirty ounces of blood, and succeeded in a sufficient number of cases to prove the correctness of their practice and the nature of the disease. Depletion to such a large extent could not be explained on the principle of combating peritonitis; but is intelligible as relieving the liver, spleen, and central organs from the mass of poisoned blood. When so employed, it should immediately follow the rigor, because, if time is lost, nervous power is paralyzed, and the very same treatment only hastens dissolution.

Another class of remedies has also been warmly advocated, and has met with considerable success. Many years ago, Dr. Brenan, of Dublin, used oil of turpentine both internally and externally with great advantage. Dr. Copland approves of this practice, and from his experience of a severe epidemic

in the Queen Charlotte's Hospital, he came to the conclusion that "there is certainly no remedy so efficacious as a decided and judicious use of spirits of turpentine."

Dr. Copland also found camphor in doses of from eight to sixteen grains extremely serviceable. These remedies are altogether different in their character and in their action from the former; they are not only stimulant, but anæsthetic; both are hydrocarbons, and possess the common properties of these bases; they are useful, not merely in stimulating the constitution against the attack, but by diminishing pain they lessen nervous exhaustion. Nothing relieves the extreme tenderness of the abdomen so much as turpentine fomentation; taken internally, it relieves the tormina of flatus. Camphor also assuages the intensity of neuralgic pains. Reasoning upon these facts, it seemed probable that chloric ether might be serviceable, at least in relieving pain: the following case will explain its effect.

In 1855 I was called to see a woman who had been seized the day before with puerperal fever. She was lying on the bed with her knees drawn up; the abdomen distended and extremely painful; the extremities cold; and pulse, 150. I did not think she would live till the next day, and ordered thirty minims of chloric ether with twenty minims of tincture of opium every second hour, merely to give some relief to the intensity of her suffering.

The following day I found that the pain had been completely removed, and she was then comparatively comfortable; but there was no change in the pulse. She, however, rallied so far as to continue in this easy state for nearly a week; but the poison had done its work, the vital powers could not recover themselves, and she sank after this protracted struggle.

Very lately two other cases came under my notice. In the first, the woman had been two days ill. She was propped up in the bed, suffering intense pain, and gasping with painful respirations; the same means gave her immediate relief; but she was too far gone to have any hope of saving her. In the second case, this treatment was carried out so successfully that the woman recovered. I am, therefore, strongly inclined to the opinion, that anæsthetics would be found most useful agents in aid of other remedies. They cannot be depended upon alone, because pain may be relieved, and the disease still makes its progress, but that relief greatly assists any means which may be used to combat this malady.

General rules for the treatment of puerperal fever can scarcely be laid down, so much depends on the character of the

epidemic and the quantity of the poison absorbed. If the dose be a maximum, it is impossible to save the patient; if in such quantity that the constitution can make an effort to get rid of it, much of our success will depend upon a close observation of the manner in which the effort is made : and it is here that promptitude is attended with so much success. Prompt depletion immediately after a rigor has saved many a patient; emetics, purgatives, diaphoretics, and even diuretics, have proved their value when given with promptitude and decision. Depletion has had the most success, because, in the majority of cases, a rigor is a well-marked and early symptom. If the dose be a minimum, just sufficient to excite peritonitis or phlebitis, the treatment must be directed to subdue these inflammations, and the danger consists in the nature of the tissue inflamed. Such cases are met with in hospitals on the decline of the epidemic, or are scattered through a district on the outskirts, as it were, of the poison.

Those authors who have adopted the term "puerperal fever" have made classifications of its varieties. Tonnelle describes the inflammatory, adynamic, ataxic forms; Ferguson, the peritoneal, gastro-enteric, and nervous fevers; Gooch, the inflammatory and typhoid: but these terms only signify degrees in the dose of the poison, not any essential difference in the fever itself; and the remedies to meet these several conditions are successful in proportion as they may remove or neutralize the poison absorbed, or support the constitution against its influence.

The prophylaxis of this malady is a question of even more importance than its treatment. The means of arresting its progress, or expelling it from a locality, may save many lives; the best directed treatment has sometimes scarcely saved one life in ten. In this, as in other toxemic diseases, *ventilation* plays an important part; and much of the mischief caused by this scourge has arisen from our ignorance of the principles of ventilation. The Continental hospitals are remarkable instances of neglect of these principles ; their mortality varies from 1 in 13 to 1 in 20, chiefly in consequence of puerperal fever, the result of imperfect ventilation. Until lately, our own hospitals were liable to a similar objection ; but the General Lying-in Hospital in the York Road, built on the marsh of the Thames, is an evidence of the value of an improved knowledge of this subject. The puerperal fever which so often poisoned its wards is, I believe, now totally expelled.

Another very fertile source for the production of animal poisons is, bad or imperfect drainage, which may baffle the

best directed ventilation. *The sewerage* of the metropolis is now becoming the subject of animated discussions ; and we have learned that there are a multitude of cesspools carrying on their "fæcal fermentations" with an activity which the best ventilation could not remove. It is not surprising, therefore, that puerperal fever should be found scattered through London, even in houses where one could hardly expect it. It is to be hoped that the attention now given to this subject will be the means of destroying such a source of infection. But something more is required than emptying cesspools. It is equally important that the putrescency removed be not brought back again. Some years ago a part of the Edgeware Road was under repair, and a quantity of Thames mud was laid as a foundation for the pavement. In three days afterwards, five cases of cholera occurred in that district; and if there had been any cases of labour, puerperal fever might as easily have been produced, to spread through the neighbourhood. A law is required to regulate the movements of certain manufacturers, builders, and paviors, lest they undo what the public are endeavouring to accomplish. Nay, we would venture to hint that such a law might be of great value if it prevented a more important personage establishing a gigantic cesspool at Erith, where fæcal fermentations may be carried out on a scale of sufficient magnitude to bring back the plague itself. Several methods have been proposed for overcoming this difficulty, but there is one which, in a medical point of view, I think well worthy of attention. Mr. Dovor has discovered a process of deodorization, which I have witnessed, and have been surprised at the result. By this method the refuse of the most offensive sink has been rendered perfectly devoid of smell or taste; the stinking sewerage has been converted into water nearly pure, and a residuum perfectly inodorous, but still valuable as manure. The agents employed by Mr. Dovor are hydrochloric acid, proto-sulphate of iron, and chloride of sodium : proto-sulphate of iron, because it is the best salt for fixing ammonia; and chloride of sodium, because of its chlorine. With the same object, Sir William Burnett and Mr. Morell have used concentrated solutions of chloride of zinc as disinfecting agents.

Chlorine is well worthy of attention as a prophylactic; its powers as a disinfectant had been known long before this experimental proof of its efficacy. When Dr. Collins was appointed Master of the Dublin Lying-in Hospital, puerperal fever was rife; he expelled it completely by the extreme strictness with which cleanliness and *chlorine fumigations* were carried out. Each lying-in ward, the moment it was empty,

underwent a process of fumigation and cleansing, which continued for a fortnight, when it was opened again for patients. The result was, that of 10,785 patients delivered in the hospital, only 58 died, which is nearly in the proportion of 1 in 186 : the lowest mortality, perhaps, on record in an equal number of a similar class of females[a].

Dr. Semelweiss has proved its value in the Vienna hospital, where from 250 to 300 women are delivered monthly. The wards are arranged in two divisions. In the first, about thirty medical students and eight midwives attend; in the second division there are twenty-eight midwives, and no students. The mortality in the first division varied from 30 to 70 per month ; while that in the second (the midwives' department) was only from 7 to 9 per month. In one year, the mortality in the first division varied from 30 to 70 per month; while in the midwives' department it was only from 4 to 7 per month. In one year the mortality in the first division amounted to 500 ! while, in the worst period, it did not exceed 40 in the second division. Dr. Semelweiss was at a loss to explain this extraordinary difference; he could not admit superiority of skill in the comparatively ignorant midwives : the only difference he could think of between them was, the dead-room. The students were always making post-mortem examinations ; the midwives never entered it. He assumed from these facts that the cadaveric contagion was communicated to the lying-in women, and excited puerperal fever. With this conviction, he employed *chlorine* as a disinfectant. Students in attendance on patients were required not to handle dead animal matter. Those who had done so were not allowed to examine patients until the following day, and, before doing so, were obliged to wash their hands, *and especially their nails*, in a solution of chlorine. Dr. Semelweiss was gratified to find that by this means he arrested the disease ; the mortality fell at once to 7 per month, the same as in the midwives' division[b].

These facts prove that chlorine is not only a deodorizer, but a disinfectant, and suggest some important questions. Is smell a proof of the vitality of a poison ? If the smell be removed, is the poison destroyed ? Every dissecting-room student knows the tenacity of the cadaveric effluvia. Washing will not remove the smell of his occupation from his hands ; he uses every precaution lest his habiliments should betray him ; the ammoniacal odour, if he is not cautious, may accompany him in

[a] Collins' Reports, p. 390.
[b] Dr. Routh's paper, Medico-Chirurgical Transactions, vol. xxx. p. 36.

his amusements as well as his studies; he, therefore, employs every means in his power to avert such a catastrophe : hence the value of chlorine, which Dr. Semelweiss has proved destroys equally the odour and the poison.

Mr. Dovor finds chlorine valuable as a deodorizing agent; and, as it is also used as a disinfectant, we may assume that if putrid effluvia be destroyed, the poison to which it belongs became inert. If this view be correct, it has a very important relation to puerperal fever, because it is always accompanied by a peculiar odour. The effluvia of the lying-in ward is well known to those who attend lying-in hospitals ; but the odour of puerperal fever is different : it is faintly acid, very difficult to describe, but easily recognised by those who are accustomed to the disease. I believe that it is equally tenacious as the cadaveric odour, and will accompany the practitioner unless he is strictly on his guard against it. Chlorine will destroy this effluvia ; does it destroy the poison producing it ? If so, may it not be used internally, as well as externally ? Hydrochloric acid, chlorate of potash, chloride of sodium, as a purgative, are at least worth a trial. I offer these suggestions with diffidence, because I have not yet had an opportunity of testing them by experiment.

Anæsthetics are agents which seem to have a prophylactic power. The drunken piper who escaped the plague will illustrate my meaning. Drunkards are less under the influence of poisons, because the susceptibilities of the nervous system being blunted, as it were, by their potations, the activity of the absorbents is proportionately diminished. On this principle, chloroform, so far from being a cause of puerperal fever, seems to me a preventive; and if this scourge were raging in a district, or decimating an hospital, I should certainly take advantage of its power, as a security against the attack.

In the review which has been made of this perplexed subject, the object has been to remove from it what seemed unnecessary difficulties, caused by the terms employed to designate this disease. The correctness of naming it an inflammation of one or other of the tissues engaged was questioned, because such inflammations were only accidents, which may or may not be present, and do not constitute the essential character of the malady. Hence, the correct principle of treatment is, the employment of such means as will remove or destroy a poison, not such as are intended to combat an inflammation.

Lastly. At the present time, when so much attention is given to sanitary measures,—when the old bills of mortality have been succeeded by a most valuable system of registra-

tion,—it seems to be a very grave error to call a morbid poison by a wrong name ; and if in their returns the profession send in cases of puerperal fever under the names of " peritonitis," " phlebitis," " arthritis," they not only deceive themselves, but the public. Those precautions which are necessary when poisons are present are neglected, because it is believed to be, and is called, a simple inflammation ; and it is only when the so-called inflammations are flying from house to house or from bed to bed, that alarm is taken,—just when it is too late. The Registrar-General receives a return unintentionally false, and puerperal fever may be raging in a district where the name is never heard : but the period is remarkable, because of the number of post-partum inflammations which have had a fatal termination.

Art. II.—*Observations on Subacute Inflammation of the Prostate Gland, its Diagnosis and Treatment.* By T. Hawkesworth Ledwich, M. R. I. A., F. R. C. S. I., Lecturer on Anatomy and Surgery in the Original School of Medicine, Dublin.

The critical analysis of the various surgical essays and class-books renders the fact sufficiently manifest, that observation has left but little to be added to the stock of our present knowledge on the more frequent morbid states of the prostate gland. The descriptions of acute inflammation and its sequelæ, as to symptoms and pathology, are sufficiently minute to be available in practice ; whilst the chronic enlargement of senility, having formed the subject of accurate investigation and close inquiry as to its advent, progress, and treatment, ceases in a great measure to afford a field for the exercise of the labours of the surgical pathologist, except in some rare and complicated cases that still, lying beyond the limits of routine description, demand further examination. But these examples are so few, and their occurrence so exceptional, that they attain a diminished amount of pathological importance commensurate with their general insignificance. Still, whilst fully recognising this descriptive completeness in connexion with acute inflammation and chronic hypertrophy, there are yet morbid changes equally manifest, inducing symptoms as evident as those indicating the former maladies, which seem to have eluded the attention of surgical writers, perhaps not wholly, but certainly to a great extent ; and when subacute inflammation of the prostate gland has been noticed, the remarks have been cursory and incomplete, although the disease is associated with symp-

toms which exercise a more injurious influence, both physically and morally, on the patient than possibly any other affection to which the gland is liable. Subacute inflammation of the prostate occurs at an early period of life, and occupies an intervening position between actual or acute disease and chronic hypertrophy; partaking of the character of the former in the occasional severity of the symptoms that indicate irritation, and approximating the latter in its tendency to assume a persistent form unless submitted to a course of judicious and persevering treatment. But it must not be inferred that any causative connexion subsists between these maladies, as the acute never seems to merge into the subacute, nor the latter into senile hypertrophy. In fact, this affection appears to be an independent form of inflammation, peculiar in its causes, symptoms, and results; never suppurates or excites surface ulceration, nor does it involve as an invariable contingency any permanent organic change in the prostatic structure which is not amenable to proper treatment enforced at an early stage of the disease. It is, therefore, evident that its just diagnosis attains a character of much importance in relation to its correct treatment; and it is frequently a work of the greatest difficulty to penetrate the obscurity which often involves those cases, deepened by the indisposition of the patient to throw the light of an accurate history and candid narrative of his symptoms on the difficult path of investigation which leads to the diagnosis of subacute maladies of the urinary organs. This aversion to frank communication seems to arise in a great measure from the fact of the patient having taken an incorrect view as to the nature of the affection under which he labours, and yields rather to morbid views in that respect than to the legitimate desire to unfold the depressing symptoms that render even pleasure disagreeable. However, a close investigation of the case by its physical signs and vital symptoms, with other manifestations of urinary disturbance, will lead to the *detection* of the seat of the disease; whilst a further system of negative reasoning becomes requisite in order to arrive at its correct diagnosis.

In order that a just conception may be formed of the symptoms appertaining to this affection, a few reflections on the general relations of the organ involved will constitute a legitimate introduction to its more immediate pathology. Just at the period of puberty the prostate undergoes a remarkable increase of size, and its structure appears more spongy, vascular, and soft. The prostato-vesical plexus and structural vessels of the gland are largely increased in diameter, representing

a huge mass of erectile vascular tissue, subject obviously to be the seat of temporary congestions, as these vessels are amenable to the same influences which govern the production of sexual excitement—an instinct attaining its acme of development at this period. Further, the prostate is placed at the point of communication between a reservoir and its efferent canal; and the conditions of the latter in their various states of distention must exercise a corresponding impression on the gland. Again, its capsular investment, by a dense and unyielding tissue, renders an increase of volume liable to alter the canal which permeates its structure; whilst pathological changes in the character of the fluid it transmits tend materially to originate disease or modify its symptoms when in existence from other causes. Finally, its contiguity to the rectum, bladder, and seminal organs sufficiently accounts for the reciprocal relations that subsist between them in their several affections, and render a more minute examination of the subject a mere pathological superfluity.

The symptoms attending subacute inflammation of the prostate are liable to some variety both as to number as well as intensity, being greatly influenced by the period of the disease, the moral aspect of the patient, and the previous condition of the general health. There is a more frequent desire to pass water, sometimes continuing with great intensity for a few days, and then becoming mitigated without any apparent cause. The patient complains severely of an inability to retain his urine for any length of time; uneasiness in the perineum, amounting to burning or scalding, with occasional sharp attacks of strangury, and a desire to go to stool, accompanied by great straining in passing the last drops of urine. The urine is usually acid, depositing crystals of uric acid and shreds of mucus; but it may be intensely alkaline, becoming rapidly ammoniacal, and throwing down mucus and the phosphates in quantity. There is likewise dyspepsia, with great nervous irritation, coughing, and straining at stool, or priapism, causing a discharge of mucus, perfectly clear and transparent, from the orifice of the urethra, which, being examined microscopically, yields the following composition:—1. Morphous crystals of uric acid, or ammoniaco-magnesian phosphates. 2. Mucus corpuscles. 3. Blood discs. 4. Epithelium. On introducing the finger into the rectum there is tenderness; and although a full-sized catheter (No. 10) will pass with facility through the urethra, it causes the patient the most intolerable agony, often lasting for hours after the operation. The penis is sometimes painful at the glans, and the organ is hard and shrunken, as

if the crura participated in the general urethral irritation. In the morning the symptoms are almost absent, but increase gradually from midday, the patient being frequently roused from sleep by scalding pain in the urethra, and irritation of the rectum, which keeps up a continual desire to strain ; or again, there may be a discharge from the urethra simulating the escape of normal secretion, but which augments rather than diminishes the prevailing irritation. After some time the symptoms become aggravated, and the patient's health suffers in proportion. He is indolent, incapable of any active exertion, either mental or bodily ; his appetite fails, memory lapses, the secretions become vitiated or checked ; there is headach, pain in the back on the slightest exertion, and depression of spirits, more or less marked.

The patients most prone to this affection are those who lead a sedentary life, indulge in late rising and other forms of dissipation ; who take but little exercise, and that, when taken, accomplished rather to induce fatigue than to create relaxation ; and when once the disease is established, the constant lapse of the patient's mind towards its seat tends not only to perpetuate the malady, aggravating the prostatic symptoms, but also complicating it with others equally intractable as to their nature and treatment. As in all subacute diseases, one set of symptoms may predominate over others: thus in one, the inability to retain the urine forms the principal source of complaint ; in a second, the daily recurrence of perineal irritation ; in a third, the urethral discharge ; whilst in the most inveterate cases the mental influence creates a degree of depression more permanent than even the existence of a fatal disease. But fortunately this latter condition arises from the mistaken idea of the patient that he is the subject of a seminal affection about to eventuate in impotency ; and to such an extent has this impression become rooted in the patient's mind that it has at last induced mania, rendering a safe retreat essential in order that moral as well as medical treatment might be put in force to remove the delusion and arrest its influence. To whatever cause the fact may be attributed, scrofulous patients, with fair skins and light complexion, of the nervous temperament, are most subject to this disease ; and I have met with it in two cases combined with chronic phthisis, which it much aggravated during its progress, and rendered intolerable towards the close of life.

An opportunity has occurred to me, on two occasions, whereby I became acquainted with the pathology of this

affection, and satisfied myself as to its true nature and locality. One case occurred at the age of 18, the second at 30; both were well-marked examples of the disease, and succumbed to phthisis, but this latter had no connexion with the urethral affection. The prostato-vesical plexus was full, and many of its branches varicose; the capsule of the prostate adhered intimately to its surface, and, on slicing the gland, it seemed soft, with large, open, venous branches on the section, from which blood exuded, whilst the whole gland exhibited an augmented volume; the mucous membrane of its urethral aspect was *red*, *soft*, thickened, and *villous*, whilst the ducts could be distinguished with the unassisted eye; the uvula and trigone vesicæ were red and turbid, but the remainder of the bladder was healthy. I examined with some anxiety for the presence of tubercular deposit in the gland, but, although this morbid condition was often anticipated, no evidence of any such structural lesion could be detected. The seminal ducts did not present any alteration as to size, their excretory orifices being discovered with the greatest difficulty, the vesiculæ seminales being full and swollen, but without any other abnormal appearance; scrofulous tubercles existed in the epididymis, yet the testicles, although soft and small, were otherwise healthy.

From the foregoing details it will be admitted, that sufficient evidence appears to justify the assertion that a subacute inflammation of the prostate gland really does exist, which, although without the active characters that mark the consecutive affection of gonorrhœa, is still sufficiently manifest to acquire a special pathological importance in urinary disease; nor can its obscurity as to its causation be received as any rational evidence of its innocuous tendency; for, on reflection, it becomes manifest that those diseases which generally elude immediate research are the most difficult to understand and obstinate to remove, and this difficulty is further enhanced in these special diseases by the similarity of the symptoms attending urinary affections, and the diversity of the pathological conditions of which those symptoms may be the visible manifestation. It is, therefore, rather by a system of negative reasoning, than by the presence of positive signs or special characters, that the basis of differential diagnosis of urinary affections must be founded, in order to represent any practical value in isolating disease and determining its causes, nature, and treatment.

I now propose to illustrate the history and treatment of

this malady, by introducing the details of a sufficient number of cases requisite to exhibit its various peculiarities as to symptoms, diagnosis, and treatment.

A gentleman was sent to me by a physician, in consequence of some symptoms he laboured under resembling stricture, of which the most disagreeable seemed to be a frequent desire to pass water, its escape in a forked stream, followed by the escape of a few drops of clear mucus, particularly after any severe walking exercise. He is thirty-one years old; large, full, florid, and well developed, with light hair and fine skin; he states that he has suffered uninterruptedly for at least eight months; urine, acid, sp. g. 1·18; No. 8 catheter passes without difficulty, but causes much pain in the recto-bulbar space, and, on examination by the rectum, pain and tenderness are produced during light pressure on the prostate. There is no physical sign of stone, nor is there pain on deep pressure above the pubis; symptoms of gouty disposition are also absent; the mucous discharge is free from spermatozoa. In this case my attention was first drawn to the probability that it partook of the specific nature of gout; but the absence of hereditary tendency and other concurrent symptoms of that affection negatived this supposition; absence of spermatic elements removed the possibility of spermatorrhœa; the period of life was opposed to the symptoms being the early manifestations of chronic enlargement of the gland, which they particularly resembled; whilst the absence of the physical signs of stone, stricture, or the vital evidences of nervous lesion, combined with the positive manifestations of prostatic disease, formed sufficient grounds for determining this to be an example of subacute inflammation of the gland. He could not assign any exact cause for the affection, not having been at any time particularly prone to dissipation, but dates its appearance from being several days consecutively on horseback, in cold, wet weather, when he was constrained, by the pressure of duty, to ride rapidly: at the present time, riding always aggravates the symptoms on the succeeding night, during which he sometimes has to pass water from seven to eight times, rendering his sleep most uncomfortable. I recommended the application of leeches to the perineum; suppository of soap and opium by the rectum; warm bath each night; and the administration of alkalies with hyoscyamus; vegetable diet; and to lie with the pelvis raised on a pillow during the night. Having persevered in the foregoing plan of treatment for three weeks, the symptoms wholly disappeared; and following it up with cold bathing, tonics, frictions to the buttocks, groins, and perineum, no further re-

currence of the disease took place, and now, after a lapse of seven months, he remains perfectly free from any annoyance.

Mr. M., aged 30, a railway official, of sedentary habits and sanguine temperament, complains of fulness in the perineum and rectum; sudden scalding, inducing a desire to pass water; mucous discharge from the urethra during stool, and frequently at night when he coughs or sneezes, but sometimes without any exertion. He has suffered now for three years, and has been treated for spermatorrhœa by iron constitutionally, with caustic applications locally, which seem to have aggravated rather than mitigated the symptoms of irritation, as, after each operation, the pain and burning returned with greater energy than before. He attributes the disease to excessive dissipation, which, however, he has relinquished for the last two years. On examination by the rectum, the prostate feels hard, and its outline can be distinctly traced, particularly tender in its left lobe, not so painful in the right; when pressure is carried from behind towards the penis, an opaque drop of mucus exudes, of which mucous corpuscles, epithelium, and phosphates were the only solid elements; *there were no traces of spermatozoa.* He has had occasional seminal emissions, and on this subject he seems to be quite hypochondriacal, fearing the results of that malady, to which his attention is especially directed in consequence of the treatment that he was subjected to on a former occasion: observes that attacks of headach always supervene after exercise, and that he is easily fatigued, sweating profusely; wishes to have caustic again applied, notwithstanding his former experience of its injurious nature. In this case the symptoms were obviously prostatic; but there was some difficulty in the differential diagnosis as to whether the irritation resulted from the entrance of foreign material into the urethra at an abnormal period, or that the affection was primarily prostatic, totally independent of the seminal organs. This course of necessary discrimination seems to be especially avoided by those who essay to perceive in every case of chronic urethral discharge circumstances sufficiently suspicious to justify the indiscriminate use of caustic, a proceeding unfortunately tending not less to the probable injury of the patient than opposed to the true interests of scientific research. It is never a subject of much difficulty to accommodate the history related by a weak-minded person, so as to correspond with preconceived ideas of a certain disease: the duty of the surgeon is, therefore, obviously, to denounce this unprofessional pandering to the morbid prejudices of an ignorant patient; but at the same time it would be equally erro-

neous to discountenance the use of caustic when necessity demands the operation, or circumstances indicate its utility; but experience has proved that the cases in which its application may conduce to the patient's advantage are the exceptions, not the rule; and its injurious effects in the majority of patients, where its employment is only sanctioned by empirical reasoning, become so manifest that something more than a silent negation of its inconsiderate employment is required from our profession. It certainly fixes the patient's mind on these particular organs, creating a nervous terror of impending consequences, and inducing irritation of no ordinary severity when applied to an organ already within the confines of actual inflammation. Further, I am confident that it often produces the very disease it is proposed to relieve. Let each case be closely analyzed, without preconception or prejudice, prior to the employment of caustic, and a useful and powerful remedy, in some cases, will take its legitimate place as a therapeutic agent. The presence of the elements of mucus only, combined with the positive symptoms, was sufficient to discriminate the true nature of the case; but without the assistance of the microscope, and its revelations, I might have perpetuated the erroneous convictions of the patient's previous advisers. Blistering the perineum, suppositories, with the administration of cubebs, failed to alleviate the symptoms, as the discharge continued with unmitigated perseverance, notwithstanding the fact that, under the use of cubebs, there is often a rapid decline of the disease. The powder should be given in drachm doses every fourth hour, with large imbibition of diluents, and the recumbent posture enjoined. The balsams, with Pareira brava, were equally inefficacious; but, by the continued use of the sulphate of zinc internally, gradually increasing the dose until twelve grains constituted the daily amount, avoiding constipation, and injecting a solution of diacetate of lead and opium into the prostatic portion of the urethra, the affection gradually subsided, whilst cold baths, tonics, and sea-air, completed the convalescence. In order that injections may reach the distal portions of the canal, special instruments must be used. I have had a catheter, No. 6, made for the purpose, perforated near the point at about one dozen different places; to this an ordinary syringe is adapted, and, having placed the patient in a recumbent posture, the instrument is passed down to the prostatic portion of the canal, and into it I then gently force two drachms of any special solution previously selected, allowing it to remain at least twenty minutes. It never passes into the bladder, or creates any disagreeable effects; but it is

only when other means have failed that the introduction of an instrument is justifiable, although I have found such decided advantage to accrue from the cautious but persevering exhibition of injections, that I look upon them as one of the most powerful remedies to combat this particular disease. Still, even here the practice must be influenced by the nature of the symptoms, and the effects of its first application particularly noted before having recourse to its repetition. If the passage of the instrument creates pain, induces spasm, draws blood, or if the injection is rapidly returned, with subsequent dysuria, and the passage of bloody mucus follows, these circumstances will contra-indicate its further use, and demonstrate its injurious tendency, rather than any possibility of deriving beneficial changes from its continuance.

I have tried various forms of injection, such as gallic acid solution with hyoscyamus, the decoction of tormentilla with belladonna, in cases associated with severe strangury, but after sufficient experience of these, I find the diacetate of lead with opium in solution as being much better tolerated, and also more specific in its influence on the mucous membrane of the canal; and, after its employment in a number of cases, it may safely be asserted that it never has been productive of those injurious results conceived to arise from the immediate application of sedatives to the prostatic portion of the urethra, which may have had their origin in the use of unsuitable instruments, the exercise of undue force, and improper forms of injection. But with caution, gentleness, and address in the performance of the operation, safety is attained, and benefit accomplished. In the history of a typical case, it has been remarked that the constitutional sometimes exceed the local symptoms in severity, especially in patients of a nervous temperament, with weakened mental powers, who are always prone to exaggerate their suffering, and recoil from the contemplation of the highly-wrought picture they have executed. Such patients are usually the victims of hypochondriasis, and have been subjected to treatment for a long period. An example of this description has recently come under my observation, in the person of a student, aged 23, the subject of long-continued disease of the prostate. He was much emaciated, unable to fix his attention on any subject, with pains in the spine, combined with frontal headach; has seminal emissions (supposed) every night, and occasionally during the day; was cauterized four times at his own urgent request, and has tried numerous remedies, under medical and non-medical advice, without avail. He is almost fatuous and sleepless, being disposed to cry even if spoken to

in a loud voice; has tenesmus, frequent desire to pass water, with burning pain in the perineum, and prostatic tenderness. I requested him to bring me a portion of the discharge, and that, if it contained spermatozoa, I would yield to his request, and apply the caustic,—a proceeding rendered questionable by the fact that the gentle introduction of a No. 8 catheter produced the most intense pain and bloody urine. On the next day a portion of the ejected fluid was placed on the field of a "Ross," with an eighth object-glass, and it was found to consist of mucous corpuscles, squamous epithelium, blood-discs, and prisms of ammoniaco-magnesian phosphate, without a single spermatic element to justify the diagnosis which was previously formed.

There was some difficulty in treating this case, in consequence of the mental disorganization. The nervous irritability was allayed, and sleep induced by opiate enemata; blisters to the perineum repeated weekly; raising the pelvis during sleep, to favour the return of the venous blood; cold bath; gradual exercise; sea air; with the internal administration of the sulphate of zinc with extract of rhubarb, constituted the course of treatment pursued for four months, when it was finally successful. It was curious to remark the sequence observed in the disappearance of the symptoms. After a month the mental depression no longer existed, and he became cheerful and buoyant, although the local disease was without alteration, as the mucous discharge continued almost to the last; but yet he expressed himself cured long before it entirely ceased to escape from the urethra.

Alterations in the form of the external genitals are in all treatises associated with disease of the seminal organs, in order to suit the special tendency of the inquirer; but that they are by no means allied in the relation of cause and effect will appear from the following case:—

Mr. L., a divinity student, aged 26, stated that he was in the habit of bathing during the winter, and thus brought on the disease under which he labours. *Has been treated by a quack, who impressed on his mind the certain results of the severe malady he has acquired;* this creates morbid states of ideation, whilst physically he is pale, emaciated, and feeble, with the following symptoms:—Alkaline urine, frequent desire to pass water, sweating, slight urethral discharge, and prostatic tenderness. The penis is small, hard, and contracted; the glans cold and blue; scrotum relaxed; testicles soft, but not atrophied. This alteration in the penis is of comparatively recent date, and is coincident with the conviction that he had become

impotent; not that he had any evidence of the fact, but because he had read of such results being constant in these cases, attended with the sense of debility he complained of. Having divulged the nature of his case to his brother, a medical man, he placed him under my care, and having first removed the delusion as to seminal disease, and insisted on the removal of a special apparatus to compress the urethra during sleep, the administration of acid tonics, blisters to the perineum, sedative injections by the urethra, with well-regulated diet, restored this patient and his genitals to their normal condition, and no relapse has occurred.

There still remains to be noticed an exceptional symptom which admits of practical illustration, and although it comes under the class of hemorrhages, it assumes the mitigated form of passive exudation, that so often accompanies subacute inflammations of mucous membranes, in which we fail to discover any ulceration or breach of continuity, although such, it is obvious, must be in existence to permit the escape of the blood-discs.

A gentleman, aged 46, married, and subsequently contracted gonorrhœa, which yielded after some time to the usual treatment. He then, for two months, felt perfectly well, but gradually became affected with more frequent desire, strangury, tenesmus, mucous discharge, and prostatic tenderness. The discharge is always tinged with blood, so as to discolour the clothes. It consists of mucus, epithelium, and blood-discs, the latter being numerous and granular. Ordered, ten leeches to be applied to the perineum, with gallic acid and extract of hyoscyamus internally. This treatment was not productive of any benefit. Anodyne enemata relieved the symptoms for a few days, but they again returned. After a long walk he had a strong desire to void urine, and he then observed that, by straining, only drops of blood were expelled. This continued during the night, and on the next day, when I saw him, he had lost about four ounces of blood. I recommended the recumbent posture, with small doses of gallic acid, sufficient to control, but not wholly to arrest the bleeding. It progressed until the third day, when it gradually ceased, and with its cessation all the other symptoms of irritation permanently subsided, so that nature accomplished the salutary change that art was unable to achieve.

I have endeavoured to avoid the unnecessary introduction of cases to a number greater than was absolutely requisite to illustrate practically this well-marked affection, and draw at-

tention to its special features and treatment; and although it may appear as an attempt to introduce a distinct element into the already crowded literature of urinary pathology, still, in this age, when it is the habit of some even of our own profession to treat of those diseases only which pander to public credulity, it is conferring an advantage on the social position of our profession, if a common source for the emanation of prurient imaginings be placed beyond the limits of empiricism, and replaced within the circle of scientific medicine; and, although the name of Lallemand must always attain its just amount of respect, still it is the duty of every scientific inquirer to condemn those fallacies induced by his writings, and sanctioned, apparently, by his authority, which have tended to increase empiricism, and detract from the character of medicine as a science.

From these details the following conclusions may be deduced:—

1. That a form of subacute inflammation of the prostate gland really does exist.
2. That it differs in its causes, progress, and termination from any previously recognised disease of the gland.
3. That all circumstances tending to produce blood determination to the pelvic organs become exciting causes of the disease.
4. That it occurs at or about the age of puberty in the majority of cases.
5. That the scrofulous diathesis predisposes to its development.
6. That it is a progressive affection, but does not proceed to disorganization.
7. That it is frequently and ignorantly confounded with spermatorrhœa, they being sometimes, but rarely, associated as independent diseases.
8. That whilst caustic aggravates the disease, it yields to tonics, sedative injections, and counter-irritation.

In concluding these observations, I must apologise for the absence of quotation from recognised authority, but it is not from any indisposition to avail myself of the labours of Hunter, Home, Coulson, and Adams, that I am deterred from introducing their remarks; but solely from the feeling that the nearer a fugitive paper approaches the character of a study from nature in its morbid aspects, the more valuable it becomes as a practical record.

Art. III.—*Observations on the Human Crania contained in the Museum of the Army Medical Department, Fort Pitt, Chatham.* By George Williamson, M.D., Staff Surgeon, Second Class.

(*Continued from* vol. xxiii. p. 373.)

OVAL SKULLS.

DIVISION 13.—NEW ZEALANDERS.

There are four skulls of New Zealanders in the Collection. The skulls are of large size, oval, and well formed, with oval faces, and resemble European skulls in almost every particular; the forehead is broad, arched, but rather low and receding; the vertex is well arched, of moderate breadth, and not flat; the occiput is not prominent, but well rounded off; the ridge for the attachment of the temporal muscle is extensive and well marked; the superciliary ridges are prominent, and there is a depression across the root of the nasal bones, but this is not so great as in the Australian, nor is it greater than in the generality of the European skulls; there is a deep depression across the malar bone immediately below the prominent external angular process of the frontal bone; the nasal bones are very highly arched, and the breadth between the eyes is not great; the malar bones have the same direction as in European skulls; the alveolar processes are straight, and do not project; the anterior nasal aperture is of this form, which is that of the European skull. No. 449 is a large heavy skull with the bones of the face large, and the ridge for the attachment of the temporal muscle is extensive, and very strongly marked, as likewise those on the occiput; the malar bone and zygoma are strong; the lower jaw is strong, but presents no difference; the surfaces of the teeth are much worn down. These are the only points in which it differs from European skulls: the other three skulls resemble European in every particular. Wormian bones were found in the occipital suture in two instances, and in one instance in the temporal and sphenoid suture.

No. 447.

The two tattooed heads are beautiful specimens of this race.

No. 447. Skull of a New Zealander. Cranium oval and well formed, and resembles the European in every particular:

the forehead is rather low, but well arched; superciliary ridge prominent: the ridge for the attachment of the temporal muscle is extensive and well marked; nasal bones very highly arched, and remarkably prominent; alveolar processes straight, and do not project; the teeth are sound and regular.—*Donor, Dr. M'Leod, D. I. G.*

No. 448. Skull of a New Zealander.—Cranium large, oval, and well formed; forehead rather low, but arched; superciliary ridge well marked; nasal bones prominent and highly arched; alveolar processes straight, and do not project; the teeth are sound and regular. This skull has all the European characters strongly marked.—*Same Donor.*

No. 449. Skull of a New Zealander.—Cranium large and oval; forehead broad, but very low and retreating; vertex broad; ridge for the attachment of the temporal muscle is extensive and well marked, and also the ridges on the occiput; the superciliary ridge is very prominent; the bones of the face are large, and the malar bone and zygoma are very strong; the nasal bones form a sharp arch, but are not prominent; the alveolar processes are straight and do not project; the teeth are strong and regular, and their surfaces worn down, more particularly the bony part or centre of the teeth; the incisors are round and sharp; the sweep of the lower jaw is great, and its condyle large and expanded, as likewise the corresponding articular surface in the temporal bone; the base of the skull is deficient; the cranium is heavy, and the bones are thick. The skull has all the characteristics of a large European skull.—*Donor, Mr. Imlay, A. S. Staff.*

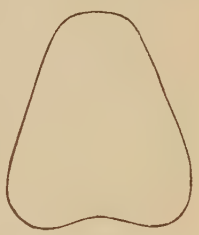
No. 451. Tattooed head of a New Zealander.—Head large; forehead broad, but retreating; hair black, thick, and in long flowing curls; nose very prominent; lips thin; the hair is long on the upper lip and point of the chin.—*Donor, Dr. Gibson, A. S. Staff.*

Class III.—skulls with the superciliary ridge most remarkably prominent and overshadowing the face.

division 1.—sandwich islanders.

There are five skulls from the Sandwich Islands, three of which, viz., Nos. 453, 454, 455, resemble each other, the chief characters being the very remarkable prominence of the superciliary ridges, which project entirely in front of the face, especially in No. 454, and the deep depression across the root of the nasal bones, and also across the malar bone immediately below the prominent external angular process of the frontal

bone. The cranium is small and narrow; the forehead low and receding; the vertex arched, but not broad; the occiput well rounded; the ridge for the attachment of the temporal muscle is not extensive nor well marked in Nos. 454 and 455; it is, however, extensive in No. 453; the bones of the face are small and very short, and stand backwards behind the prominent eyebrows; there is nothing remarkable in the position of the cheek-bones or zygoma; the nasal bones are small, and slightly arched at their lower part; the anterior nasal aperture is of this form in No. 455; the alveolar processes are very short and rather broad in front in Nos. 453 and 454. In No. 455 the alveolar processes project somewhat; the orbits are small and contracted; the surfaces of the teeth that remain are worn down; the base of the skulls presents no difference. The skulls are heavy, and the bones thick. No. 456 resembles the Malay skulls in the broad flat face, the cheek-bones, alveolar processes, nasal and frontal bones being all nearly on the same plane. These peculiarities will be observed on referring to the description of the skull. No. 457 resembles the Negro skulls in the small, narrow, but straight and well-arched forehead, the nasal bones on the same plane, the form of the anterior nasal aperture, and the slightly projecting alveolar processes; Wormian bones were found, in three instances out of the five, in the occipital suture; the sphenoid was entirely cut off from the parietal bone in one.



No. 455.

No. 453.—Cranium oval; forehead broad, but low and retreating; parietal protuberances prominent; vertex broad; ridge for the attachment of the temporal muscle extensive; superciliary ridge very prominent, and a deep depression across the root of the nasal bones; the breadth between the eyes is not great; the nasal bones are small and little arched; the face is very short, but broad and flat; the malar bones stand forward and outwards; the alveolar processes are very short, straight, and do not project; the surfaces of the few teeth that remain are smooth and worn down.—*Donor, Dr. Ray, Deputy Inspector, Royal Navy.*

No. 454.—Cranium oval and narrow; forehead low and retreating; ridge for the attachment of the temporal muscle extensive and well marked; superciliary ridge most remarkably prominent, and projecting completely in front of the face; the breadth between the eyes is not great, and the nasal bones seem to have been somewhat arched at their lower part; the

face is flat, and the bones are of moderate size, or rather small compared to the skull; the malar bones are small, and stand backwards, and are flat on the head; there is a deep depression on the malar bone immediately below the very prominent external orbital angle of the frontal bone; the alveolar processes are short and straight, and do not project; the few teeth that remain are small, and their surfaces worn down; the bones of the skull are thick.—*Same Donor.*

No. 455.—Cranium small and oval; forehead very low and retreating; ridges for the attachment of the temporal and other muscles of small extent, and not strongly marked; the sphenoid is entirely cut off from the parietal by a process of the temporal bone; superciliary ridge prominent; breadth between the eyes is not great, and there is a deep depressed groove across the root of the nose; the nasal bones are small and slightly arched; the malar bones do not stand forward nor backwards, and there is a deep depression on the malar bones immediately below the prominent external angular process of the frontal bone; the anterior nasal aperture is somewhat of the European form; the alveolar processes project to a considerable extent, and the surfaces of some of the teeth are worn down.—*Same Donor.*

No. 456.—Cranium large and oval; forehead arched, but rather low and retreating; vertex broad and arched; the space for the downward development of the brain in the occipital region is small; ridge for the insertion of the temporal muscle is rather extensive; the superciliary ridge is not marked; breadth between the eyes is rather great, and the nasal bones are arched, but not highly; the face is broad and flat, and the malar bones stand outwards; the cheek-bones, frontal, upper part of the nasal bones, and the alveolar processes are on the same plane; the anterior nasal aperture is large, and somewhat of the European form; the orbits are large; the alveolar processes are straight, and do not project; the teeth are sound and regular.—*Same Donor.*

No. 457.—Cranium small and oval; forehead arched, but low and narrow, and small compared to the posterior part of the skull; ridges for the attachment of muscles of small extent, and not well marked; superciliary ridge absent; bones of the face small, and the malar bones are flat on the head; the breadth between the eyes rather great, and the nasal bones are on the same plane; the alveolar processes stand slightly forward; the anterior nasal aperture is of the Negro form. This is the head of a young subject, the last molar tooth has not descended: the bones are decayed from having been some time interred.

OVAL SKULLS.

DIVISION 14.—OTAHEITEAN.

No. 458.—This skull is oval, and shows all the characters of the European. The forehead is rather narrow, but is straight and arched; the occiput is prominent; the superciliary ridge slightly marked; the bones of the face are of moderate size; the nasal bones are very highly arched; the alveolar processes are straight, and do not project.—*Presented by Mr. Atkinson to the Mechanics' Institution of Chatham, from which it was purchased.*

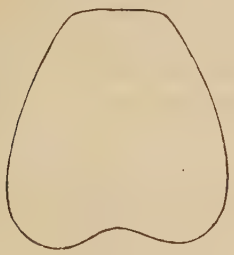
Class IV.—BROAD AND FLAT-FACED SKULLS.

The face is broad, the malar bones stand outwards, and the zygomatic arch has a sweep in the same direction; the nasal bones are more or less arched; the alveolar processes are generally straight, sometimes projecting; the transverse diameter of the base of the skull is great compared to its antero-posterior diameter.

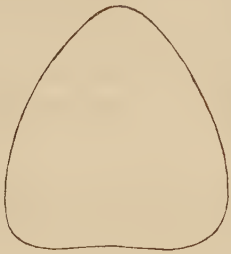
DIVISION 1.—BURMESE, MALAYS, &c.

Of these there are nine in the Collection: they are large skulls, of a round or square form. The forehead is broad, high, and well arched, and likewise the vertex; the occiput is broad and well rounded; the ridge for the attachment of the temporal muscle is extensive and well marked, but not more so than in many European skulls; the superciliary ridges are marked, but are not prominent. The distinctive character of these skulls is the broad flat face. The frontal, the upper part of the nasal bones, the malar bone, malar process of the superior maxillary and the alveolar processes are all nearly on the same plane; the malar process of the superior maxillary bone is large and flat, and stands directly out from the body of the bone, causing the malar bone to project in the same direction; the infra-orbital fossa is in consequence small, and the front of the maxillary bone is flat; the zygomatic arch takes a sweep outwards, but not of greater extent than in European skulls; the alveolar processes are long and broad in front, and stand somewhat forward. The anterior nasal aperture is large, and of the form represented in Nos. 463 and 466. The breadth between the eyes is frequently great, and the nasal bones are arched, but not highly, and that in many instances only at their superior half; the teeth are regular and sound, and covered with a black incrustation; the space for the downward development of the cerebellum in the occipital region is extensive; the transverse

diameter of the base of the skull is great in proportion to its antero-posterior diameter; this is caused by the skull being in general of a round or square form, the breadth being in a transverse direction, and the longitudinal diameter being proportionately small. Nos. 463 and 466 show the above cha-



No. 463.



No. 466.

racters in a marked degree; Wormian bones were found in the occipital suture in five instances out of the nine skulls, and in one additional instance there were two, of large size, at the superior angle of the occipital bone; these small bones were also found in three instances in the temporal and sphenoid suture; the lachrymal groove is sometimes of large size, and was formed entirely on the nasal process of the superior maxillary bone in one; the foramen magnum was large in one and small in two; there is a suture in the centre of the frontal bone in one.

TENASSERIM COAST.

No. 459. Skull of a noted character, a native of the Tenasserim coast.—Cranium large, and of a round form; the forehead is broad, high, and well arched, as also the vertex; the space for the downward development of the cerebellum is great; the ridge for the attachment of the temporal muscle is extensive and well marked; the superciliary ridge is well marked; the face rather broad, but the malar bones stand backwards, and are flat on the head; the zygomatic arch is of small extent; the space between the eyes is not great, and the nasal bones are small, triangular, and slightly arched; the alveolar processes are somewhat prominent; the solitary tooth that remains is covered with a black incrustation, and its surface worn down.—*Donor, Mr. Leslie, A. S. 45th Regiment.*

BURMESE.

No. 460. Skull of a Burmese male.—Cranium large, and of a square form; forehead broad, high, and well arched; parietal

protuberances prominent, and the vertex broad; the posterior part of the head is large, and the occiput straight; the face is broad and flat; the malar bones stand rather outwards; the breadth between the eyes is rather great; the nasal bones are oblong and arched, but not highly; the alveolar processes stand somewhat forward; the two teeth that remain are covered with a black incrustation, and their surfaces worn down; the lachrymal groove is formed entirely on the nasal process of the superior maxillary bone; the space for the downward development of the cerebellum is great.—*Donor, Dr. Browne, D. I. G.*

JAVA.

No. 462. Skull of a native of Java.—Cranium of a square form; forehead broad and well arched, as likewise the vertex; the parietal protuberances are prominent; the occiput is broad, flat, and almost perpendicular; the ridge for the attachment of the temporal muscle is extensive; superciliary ridge very slightly marked; the face is broad and flat; the malar processes of the superior maxillary bones are large, causing the cheek-bones to stand outwards; the breadth between the eyes is great; the superior half of the nasal bones are on the same plane, and the lower half is very slightly arched; the alveolar processes project somewhat; the teeth are regular and sound, and are covered with a black incrustation.—*Donor, Thomas Alexander, Esq.*

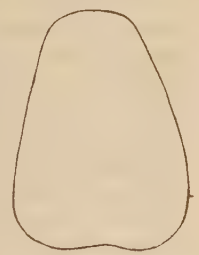
No. 463. Skull of a native of Batavia.—Cranium of a round form; forehead broad, high, and well arched; vertex and occiput round and arched; a suture in the centre of the frontal bone; superciliary ridge very slightly marked; face is broad and flat; malar process of the superior maxillary bone stands directly out from the body of the bone, causing the malar bone to project outwards; the breadth between the eyes is great; the nasal bones are small, and nearly on the same plane at the upper part, but are somewat arched at the lower half; the alveolar processes have a wide sweep in front, and are prominent; the anterior nasal aperture is of the form shown above; the teeth are sound and regular, and covered with a black incrustation.—*Same Donor.*

No. 466. Skull of a Malay.—Cranium of a square form; forehead broad, high, and well arched; a depressed groove across the skull immediately behind the coronal suture, between it and the high and prominent vertex; the occiput is broad, flat, and perpendicular; the superciliary ridge is very slightly marked; the breadth between the eyes is great, and the nasal bones are oblong and on the same plane; the face is

broad and flat; the malar processes of the superior maxillary bones are large, and stand outwards, causing the malar bones to project in the same direction; the anterior nasal aperture is of the form shown above; the alveolar processes are long and broad in front, and project; the teeth are regular and sound, and covered with a brown incrustation; the lower jaw is broad and thick, and its angle very acute; the space for the downward development of the cerebellum is great.—*Donor, Thomas Alexander, Esq.*

DIVISION 2.—CHINESE.

Of these there are three in the Collection. The skulls are of moderate size, and of an oval form. Forehead high and well arched, as also the vertex; the occiput is rounded, and not prominent; the ridge for the attachment of the temporal muscles is extensive and well-marked; the superciliary ridge is also marked in Nos. 468 and 470. In 469 the forehead recedes, and from the temporal region on each side the skull slopes gradually upwards towards the vertex, and forms a rounded arch. In this skull the superciliary ridges are absent; and the face is broad and flat. The frontal, nasal bones, cheek-bones, and alveolar processes are all nearly on the same plane; the face is not so broad and flat as in the Malay's, and the malar bones do not stand so much outwards, and the zygomatic arch is of moderate extent; the nasal bones are small and arched, but not so highly as in Europeans; the anterior nasal aperture is not large, and of this form in No. 468, which is nearly that of the European; the alveolar processes are straight, and not broad in front, as in the Malay skull; the nasal spine is not so large; the orbits vary as to size and form; in two they are circular, of which one is small, and the other large; the teeth are sound and regular; the space for the downward development of the brain is of moderate extent; the transverse diameter of the base of the skull is not greater, compared to its antero-posterior, than in European skulls; Wormian bone were found in the occipital suture in three skulls; there is a suture in the centre of the frontal bone in one; the dried head displays the peculiarities of the Chinese, which will be observed on referring to the description of it.



No. 468.

No. 468. Skull of a Chinaman, who committed suicide by hanging himself.—Cranium of an oval form; forehead broad,

high, and well arched; superciliary ridge marked; breadth between the eyes is not great; the nasal bones are arched, but not highly; the face is broad, and rather flat; the alveolar processes of the superior maxillary bones stand outwards, and the malar bones are large, and have the same direction; the orbits are small and circular; the alveolar processes stand somewhat forward, and the nasal spine is not large. The lower jaw is broad and strong, and the teeth are sound; the last molar tooth on the left side of the lower jaw springs from the ascending ramus of the jaw, and lies horizontally, its crown touching the side of the neighbouring one; this is apparently caused from want of room in the jaw.

No. 469. Skull of a Chinaman from the island of Chusan.—Cranium oval and well-formed; forehead rather narrow, but high and well arched; superciliary ridge not marked; face broad and flat; the malar process of the superior maxillary bone stands somewhat outwards, causing the malar bone to project in the same direction; the nasal bones are arched, but not highly, and they form a smooth, continuous surface with the frontal bones; the alveolar processes are partly absorbed, but they do not project in front; the nasal spine is not strong; the orbits are of a round form; the lachrymal canal is large; the cheek-bones, malar processes of the superior maxillary, the alveolar processes, nasal and frontal bones, are nearly all on the same plane; the external meatus of the ear is large, but this seems to have been caused by disease.—*Donor, W. M. Ford, Staff Surgeon.*

No. 470. Skull of a Chinaman.—Cranium oval and well formed; forehead broad, high, and well arched; a suture in the centre of the frontal bone; superciliary ridge marked; ridge for the attachment of the temporal muscle very extensive, and well marked; the face is not broad, but rather flat; the nasal process of the superior maxillary bone is flat, and the breadth between the eyes is considerable; the nasal bones are very slightly arched; the alveolar processes stand somewhat forwards; the lower jaw is narrow, and its angle very acute.—*Donor, Dr. White, Staff Surgeon.*

No. 471. Dried head of a Chinaman, preserved by an injection of sulphate of alum and arsenic, according to the process of M. Gannel.—The head is oval and well formed; the forehead broad and well arched; the hair in front is cut short, but over the occiput it is long, and plaited into a tail; the face shows the peculiarities of the Chinese, is broad and flat; the cheek-bones stand outwards. The nose is arched, but not prominent. The position of the eye is oblique: the internal

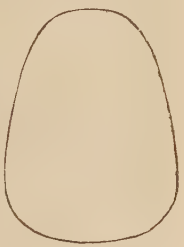
angle is drawn downwards and inwards, the external is drawn upwards and outwards; the alveolar processes and teeth of the upper jaw stand prominently forward. The beard is thin; the teeth are strong, regular, and sound.—*Donor, Mr. Allan, Staff Surgeon, 2nd Class.*

DIVISION 3.—ESQUIMAUX.

There is only one skull of this race in the Collection. The chief peculiarities are, the narrowing of the cranial cavity towards the summit, where there is a prominent ridge, and a gradual shelving on each side; the broad flat face, the outward projection of the malar bone, and the large sweep of the zygoma.

The form of the cranium has no resemblance to that of any other class of skulls. In the Australian and Tambuki Kaffirs there is a ridge along the summit, and shelving on each side; but the difference between them is very great on comparing the three classes of skulls. The points of resemblance between the Esquimaux and Malay skulls are, the broad flat face, outward projection of the malar bones, and the transverse diameter of the base in both being great.

The anterior nasal aperture is small, and of this form. A very large triquetra cuts off the superior angle of the occipital bone The details will be found in the description of the skull.



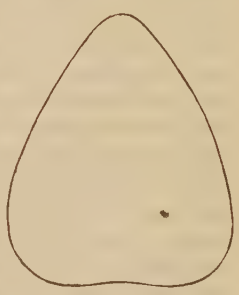
No. 472.

No. 472. Skull of an Esquimaux from Winter Island, latitude 66½°, longitude 83°. —The cranium is large, and its longitudinal diameter very great, compared to its transverse diameter; the forehead is broad and arched; the skull becomes gradually narrow towards the summit, forming a ridge which runs backward from the centre of the frontal bone towards the occiput, which is narrow and prominent. The superior angle of the occipital bone is cut off by a suture; the superior part of this bone forms a very large triquetral bone; the ridges for the attachment of the temporal and other muscles are not marked; the superciliary ridge is slightly marked. The breadth between the eyes is not great: the small portions of the nasal bone that remain show that they have been of a triangular form, and somewhat arched: the face is very broad and flat: the zygomatic arch stands out from the head, and forms a large segment of a circle. The malar processes of the superior maxillary bone are large, and stand directly out from the body of the bone, causing the malar bone to project in the same direction. The

alveolar processes are large, and project somewhat; the anterior nasal aperture is small, and not so large nor wide at its lower part as in Europeans. The cheek-bones, malar process of the superior maxillary, alveolar processes, nasal bones, and frontal bone are nearly on the same plane. The orbits are not large, and are of a circular form; the transverse diameter of the base of the skull is not longer in proportion to the antero-posterior, when a line is drawn across the base of the skull between the origin of the zygomatic process and the meatus auditorius, but it is greater when measured from the zygomatic arches; the space for the downward development of the brain is rather small, but not less than in many European skulls. The basilar process of the occipital bone is large: the foramen magnum is rather large; the sockets for the teeth are regular; the four teeth that remain are sound. The bones have a most peculiar appearance; their external surface has not the smooth, polished appearance usually observed, but presents a striated and scaly appearance, the scales being easily picked off: it resembles bone that had been calcined. — *Donor, Professor Monro, Edinburgh.*

DIVISION 4.—AMERICAN INDIANS.

Of these there are four, of which two are large and round, and two compressed, or flat skulls. The first two are large, round skulls. The forehead is broad and arched, but not highly; the vertex is very broad, and the parietal diameter is greater than in any other skulls. The ridge for the attachment of the temporal muscle is extensive, and well marked; the superciliary ridge is prominent in one, and not marked in the other. In Nos. 473 and 474, although the face is rather broad, it is not flat, and the nasal bones are well arched. The malar bones stand outwards, and the zygomatic arch has a sweep in the same direction. In No. 473 the breadth between the eyes is great; the nasal bones are arched, but not highly: the alveolar processes are rather broad in front, and do not project; the anterior nasal aperture is large, and of this form in No. 474. In No. 473 it is large and more rounded, but the margin of the aperture is not perfect: the occiput is large and well rounded, and the space for the downward development of the brain in the occipital region is very great. The transverse diameter of the base of the skull is very great in proportion to its antero-posterior

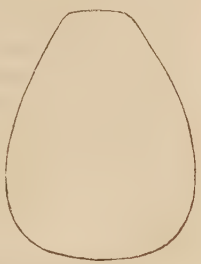


No. 474.

diameter, when a line is drawn across the base of the skull between the origin of the zygomatic process and the meatus auditorius, also when measured from the zygomatic arches and mastoid processes. The orbits are not deep; the lachrymal canal is large; the foramina for the transmission of nerves are larger than in other skulls; the foramen magnum is circular, and of moderate size. The lower jaw of No. 473 is broad, thick, and strong; the teeth are regular, and their surfaces worn down; the incisor teeth are thick, round, and flat, and not sharpened at the point.

These skulls differ from the Malay in the face not being so flat, and the frontal, nasal, malar bones, and alveolar processes not being on the same plane; the forehead is broad, but not so high; the vertex and occiput are much broader than in the Malay. The two compressed skulls show the characters of the elongated and flattened crania. The flat head, American Indian, No. 475, is flattened in a different manner from No. 476, the Carib. In No. 475 the forehead recedes gradually, and slopes upwards and backwards towards the vertex, from which the occiput descends almost perpendicularly, and is broad and flat. In No. 476 the skull is much more flattened, and the occiput pushed backwards; the compression seems to have been applied, not only to the forehead, but also to the vertex, and flattened from before backwards and from above downwards. In No. 475 the compression seems to have been applied to the forehead, and the head to have rested (probably on the cradle) on some hard point of resistance, in this manner, to have produced the flat, broad, and perpendicular occiput.

The anterior nasal aperture is of moderate size, and of this form in No. 475. The foramina for the transmission of the nerves, and likewise the foramen magnum, are of moderate size, and the position of the latter opening is not different from that in other skulls; the transverse diameter of the base of the skull is great in proportion to its antero-posterior diameter: the bones of the skull are generally thick, and of hard texture. The details will, however, be found under the description of each skull; Wormian bones were found in the occipital suture in one instance: the left wing of the sphenoid was entirely cut off from the parietal by a process of the temporal bone in No. 476.



No. 475.

No. 473. Skull of an Indian chief from Fort Marden, Canada.—Cranium of a large round form; forehead broad, but

low, and gradually recedes towards the vertex, which is also low, and of great breadth; the ridge for the attachment of the temporal muscle is extensive, and well marked: the superciliary ridge is prominent; the breadth between the eyes is great; the nasal bones are arched, but not highly; the nasal process of the superior maxillary bone is not large. The face is very broad and flat: the malar bones stand outwards, and the zygomatic arch has a sweep in the same direction; there is a depressed groove on the malar bone, immediately below the external angular process of the frontal bone: the anterior nasal aperture is large, and of an oval form; the alveolar processes are broad in front, straight, and do not project. The lower jaw is broad, thick, and strong; the teeth are regular, and their surfaces are worn down; the incisors are round, and not sharp at the point. The orbits are square, but not deep: the lachrymal canal is large; the base of the skull is very broad, and the transverse diameter is much greater in proportion to its antero-posterior, when a line is drawn across the base of the skull between the origin of the zygomatic process and the meatus auditorius, and also when measured from the zygomatic arches, and likewise the intermastoid line. The space for the downward development of the cerebellum is large.—*Donor, Dr. Wm. Horne, 2nd Class Staff Surgeon.*

No. 474. Skull disinterred from a burying-ground, at Fort Amherstburgh, Canada, by Assist. Surgeon Gordon, 34th Foot; presented by Dr. Wm. Horne, 2nd Class Staff Surgeon.—The cranium is of a round form; the forehead moderately high, and well arched, as likewise the vertex; the ridges for the attachment of the temporal and other muscles are not extensive nor strongly marked: the breadth between the eyes is not great: the nasal bones are well arched, but not very highly; the face is rather broad, but not flat. The malar bones stand outwards, and the zygomatic arch has a sweep in the same direction; the alveolar processes are straight, and do not project. The few teeth that remain are sound, and their surfaces worn down. The lower jaw is of moderate size, the angle obtuse, and the alveolar processes are partially absorbed; the transverse diameter of the base of the skull is greater in proportion to the antero-posterior; the lachrymal canal is large, the orbits are not deep.

No. 475. Skull of a Flat-head North American Indian.—The forehead is very retreating; the face projects to a great extent, and the occiput is flat and perpendicular: the frontal bone begins to retreat immediately above the orbits, and is continued gradually sloping upwards to the vertex, from which

the occiput descends abruptly, and almost perpendicularly to the foramen magnum; the ridges for the attachment of the temporal and other muscles are not extensive, nor well marked; the superciliary ridge is slightly marked; the space between the eyes is not great, and is flat: the superior half of the nasal bones are on the same plane, the lower half being slightly arched: the malar bones stand somewhat outwards, and the zygomatic arch has a sweep in the same direction. The whole of the bones of the face project in front of the frontal bone. The superior maxillary bones project to a very great extent, and the alveolar processes are also very long and projecting. The teeth are regular, and their surfaces very much worn down; the incisor teeth are round and thick, and not sharp at the point. The transverse diameter of the base of the skull is very great compared to the antero-posterior; the space for the downward development of the brain is of moderate extent.—*Donor, Dr. Muir, A. S., 42nd Regiment.*

No. 476. A Carib skull from St. Vincent.—The cranium is flattened to a very great extent from before backwards and from above downwards. The brain seems to have been all pressed backward, and its development arrested to a great extent; the frontal bone recedes immediately above the orbits, and gradually slopes backwards to the vertex, which is not much more elevated than the forehead: the vertex gradually slopes backwards and downwards to the occiput, which projects, and is narrow from above downwards; the occiput is very flat, and nearly the whole of the occipital bone rests on a plane surface. There is no space for the downward development of the brain; the space between and immediately behind the mastoid processes is very flat and hollow; the transverse diameter of the base of the skull is somewhat greater in proportion to the antero-posterior; the left sphenoid is entirely cut off from the parietal by a process of the temporal bone; the bones of the face are partially destroyed; the breadth between the eyes seems to have been considerable, and the bones of the face must have projected to a very great extent; the orbits look upwards, and have a horizontal position.

APPENDIX.

STUFFED FIGURE OF A HOTTENTOT FEMALE.

	Ft.	In.
Height,	4	$7\frac{1}{4}$
Length of superior extremities from acromion,	2	$2\frac{1}{2}$
,, arm from acromion to olecranon process,	0	$11\frac{1}{2}$
,, fore-arm from olecranon process to points of fingers,	1	3
Circumference of arm,	0	9
,, wrist,	0	$5\frac{1}{4}$
Length of lower extremity from the crista ilii to sole of foot,	2	$7\frac{3}{4}$
Circumference of thigh,	1	$7\frac{1}{2}$
,, knee,	1	$0\frac{1}{2}$
,, calf,	0	$11\frac{2}{3}$
,, ankle,	0	7
,, chest round the nipple,	2	$8\frac{3}{4}$
,, waist,	2	$1\frac{1}{2}$
,, pelvis,	3	0

The diameters of the cranium are given in the Tables.

The figure is well-proportioned, as will be seen from the above measurements. The upper and lower extremities are well made; the foot is small, but not well arched, and the toes are widely separated, but this may have been caused in preparing the figure. There is no fat on the inner side of the knees: the upper extremities are remarkably well made, and the hands small, and beautifully formed, and the points of the fingers reach to the middle of the thighs. The figure is straight and upright, the shoulders well thrown back, the neck and chest are remarkably well formed, and the latter well expanded. The breasts are large, and rather pendulous; the waist is small. The abdomen is of moderate size, and not protuberant; the hips are large, and project to a great extent, from the enormous mass of adipose substance under the integuments. There is no hair on the pubes, and the nymphæ hang down to the extent of $2\frac{1}{2}$ inches; it is one inch in breadth at the base, and gradually tapers to a point; its size must have been much greater during life. The head is broad and square; the face broad, flat, and the lower part narrow; the forehead is straight, high, and well arched; the ears are placed far back on the head, the distance from them to the prominent cheek-bones being very great. There is a fold or border posterior to the tragus; the

hair is very short and woolly, and grows in small tufts, leaving the scalp visible between them. The space between the cheek-bones is broad and flat; the external angular process of the frontal bone and the cheek-bones are high and prominent, and the latter stand forward and outwards; these, with the narrow pointed chin, form nearly a triangle. The breadth between the eyes is great, and there is scarcely any perceptible bridge of the nose; the nostrils are small and depressed; the eyebrows are straight, not arched, and the hair is scanty; the eyelashes are thick, but not long. The eyes have only a slight obliquity, the external angle being drawn a little downwards and outwards; their corners intersect somewhere towards the forehead, and not towards the middle of the nose. The lips are thin, and the alveolar processes and the teeth project; the teeth are sound and regular; the incisor teeth of the upper jaw are broad and somewhat sharp at the point; those of the lower jaw are short, thick, round, and truncated, and their surfaces smooth and worn down.—*This Hottentot figure was prepared and presented to the Museum by Andrew Smith, M. D., D. G.*

HISTORY OF AND DISSECTION REPORT ON A BUSHMAN NAMED TERENCE CANNON, MADE BY DR. WILLIAMSON, STAFF SURGEON, SECOND CLASS.

"On the 30th of April, 1845, a squadron of the 7th Dragoon Guards, with 300 Grigua Horsemen, forming the advance of a field force on service across the great Orange River in South Africa, came up with a body of rebel Boers, then in arms against her Majesty's Government. The rebels were about 700 strong, and had two pieces of cannon: they were routed. Lieutenant Gray, at the head of a small party, succeeded in capturing one of the enemy's cannon. This cannon was drawn by twelve oxen, and on the leader was a young Bosjesman, who, with other prisoners, were secured, and accompanied the troops. The following morning Lieutenant Gray was induced to send for the lad, who attached himself to him, and followed him on the return of the troops to the colony, and eventually to England, where he arrived on the 27th of April, 1847, and died on the 21st of April, 1848.

"Lieutenant Gray made many particular inquiries from the Hottentots and Bosjesmans at the time of the lad's capture, and from them, as well as from the lad's own statement, he has no hesitation in saying, there cannot be a doubt but that the lad was one of the very few pure Bushmans still existing across the great Orange River. His mother sold him, when very young, for three sheep to Carl Pretorius, one of the emigrant farmers,

and subsequently an active leader of the rebels on the day they were encountered by her Majesty's troops. The lad was baptized Terence Cannon, and at the time of his death is believed to have been about seventeen years of age.

(Signed) "Hamilton Gray,
"*Captain, 7th Dragoon Guards.*

"*Maidstone, 24th April*, 1848."

On inspection, the first thing that struck the eye was the formation of the head and face. The skin was of a brown tawny colour, nearly the same as the complexion many Europeans present when they have just returned after a long residence in a tropical climate. With the exception of the head, which had all the characters of a genuine Bushman well marked, and the slight tinge of the skin, there was nothing different, on an external view, from a European boy of the same age. He was evidently under fourteen years of age, as there were no signs of puberty, the pubes being destitute of hair; the body was emaciated, and generally well proportioned; the arms of the usual length, the points of the fingers reaching to the middle of the thighs; feet flat, the arch not well formed, and the scaphoid rather prominent; lower extremities in other respect well made, and no masses of fat on the buttocks or on the inner sides of the knees; the hair was very short, black, woolly, and in small tufts, and thinly sown, the scalp being apparent between the tufts; eyebrows black, not curved, but straight, thinly sown, and widely separated one from the other; the openings of the eyes were straight and horizontal, not oblique; nose extremely flat and broad, particularly between the eyes, which were widely separated, being $1\frac{3}{8}$ inch apart; cartilages of the nose extremely flat upon the face, the distance from the lip to the tip of the nose being only $\frac{2}{8}$ths of an inch; the apertures of the nostrils were small, of an oval form, and their greatest diameter in a transverse direction; the cheek-bones were extremely prominent, this, with the great flatness of the nose, nearly brought these three points on the same plane; the lips were large and fleshy, and much turned out; the chin receded, and the angle of the jaw was obtuse; the ears were placed far back in the head, being three inches from the malar bones, but this might be caused chiefly by the projection of these bones; the ears were of moderate size, and well formed, but stood out in a slight degree from the head; there was a fold or border posterior to the tragus; the forehead high and broad, and the hair did not descend low on the forehead, the distance between the eyebrows and hair being two inches; the

vertex was broad and flat, and the parietal protuberances very prominent.

MEASUREMENTS.

	Ft.	In.
Height of body,	4	7
Length of arm from the point of the acromion,	2	0
„ leg from the superior spinous process,	2	6½
Circumference of chest over nipple,	2	1½
„ round hips,	1	9
„ of head,	1	8¼
Longitudinal diameter of head,	0	6⅞
Parietal diameter of head,	0	5½
Frontal diameter of head,	0	4⅜
Length of head and face,	0	7½
Zygomatic diameter of head and face,	0	4⅞

After a most careful dissection of the whole body, no peculiarity either as regards the form or structure of the soft parts was observed. The skeleton is preserved and placed in the Museum; also, several diseased organs in the pathological department.

SECTIO CADAVERIS, SIXTY HOURS AFTER DEATH.

External Appearances.—Body emaciated; abdomen tumid; and fæculent matter oozed from an opening in the navel.

Cranium.—Brain healthy, and nothing unusual in the appearance or in the structure of the cortical or medullary substance, nor in the size of the nerves, was discovered; weight of brain, 2 lbs. 8 oz. 4 drs.

Thorax.—The pericardium adhered firmly and universally to the surface of the heart by adhesions of old standing; they could, however, be broken down, which showed the serous membrane to be opaque; there were also small opaque bodies of a scrofulous character deposited on its surface. The heart and ventricles were of the usual size for a boy of the supposed age, and free from disease; weight, 7 oz. 2 drs.

Larynx, trachea, and lungs healthy.

Abdomen.—This cavity showed most extensive disease. The intestines and viscera were matted together, and the convolutions adhered very firmly to one another, rendering it impossible to separate them, and formed one continuous surface, which again at several parts adhered to the walls of the abdomen; by this means several sacs were formed, which were filled with fæculent matter; on the surface of the intestines there were numerous openings which communicated with the interior of both small and large intestines, and had allowed their contents to escape; the whole of the peritoneum was very

rough and irregular from the deposition of scrofulous bodies, varying from the size of a pin's head to that of a bean, some of them of firm consistence, others in a state of softening; these scrofulous bodies were deposited in the peritoneal coat, or in the cellular substance beneath, many of them, having become large and softened, had burst both into the interior of the gut and the cavity of the abdomen. On opening the intestines at several places a few small oval ulcers were found; these were also produced by the bursting of the softened scrofulous deposits into the intestines only; the omentum was much contracted, and adhered to the walls immediately below the arch of the colon. The stomach was of the usual form, as also the caput cæcum, to which was attached a vermiform process. The liver adhered very firmly to the diaphragm and surrounding parts, and the same scrofulous deposits were found in its peritoneal covering; it was of the usual form, and its structure was healthy; weight, 2 lbs. 2 drs. The spleen adhered to the neighbouring parts; structure healthy. Supra-renal capsules and kidneys healthy: weight of right kidney, 4 oz. 2 drs.; left, 4 ozs. 4 drs. Pancreas, urinary bladder, testicles, and vesiculæ seminales of the usual form, and healthy in structure.—*This Bushman was presented to the Museum by Alexander Smith, M. D., Staff Surgeon, Second Class, Maidstone.*

MEASUREMENTS OF THE CRANIA.

The measurements were taken in the following manner:—

The *longitudinal diameter* is measured from the most prominent part of the os frontis between the superciliary ridges to the most prominent or distant part of the occiput.

The *parietal diameter* is measured from the most distant points of the parietal bones, or from the protuberances.

The *frontal diameter* is taken between the anterior and inferior angles of the parietal bones.

The *vertical diameter* is measured from the fossa, between the condyles of the occipital bone, to the top of the skull.

The *intermastoid arch* is measured with a graduated tape from the point of one mastoid process to the other, over the external table of the skull.

The *intermastoid line* is the distance in a straight line between the points of the mastoid processes.

The *occipito-frontal arch* is measured by a tape on the surface of the cranium from the suture between the frontal and nasal bones to the posterior margin of the foramen magnum.

The *horizontal periphery* is measured by passing a tape

around the cranium, so as to touch the os frontis immediately above the superciliary ridges, and the most prominent part of the occipital bone.

The *length of the head and face* is measured from the margin of the upper jaw to the most distant point of the occiput.

The *zygomatic diameter* is the distance in a right line between the most prominent points of the zygoma.

The facial angle of Professor Camper was at first taken by an instrument recommended by Mr. Morton, but this was found to be very tedious, and required considerable time, with a frequent adjustment of the different slides and screws of the instrument to take one angle. A very simple method was devised, by which thirty to forty angles could be taken in an hour: it would be impossible to make a description of it intelligible without the aid of a drawing. The accuracy of this instrument was tested in various ways, and found to be correct. Another angle has been given: this was taken by placing the cranium resting on the upper jaw.

For ascertaining the internal capacity of the cranium, vessels were first procured, which were divided into cubic inches. To measure the internal capacity, the foramina were stopped with cotton, and the cavity was filled with white pepper seed poured into the foramen magnum until it reached the surface, and well shaken in order to pack the seed: the contents were then transferred to the graduated measures, and the capacity of the cranium at once read off.

Capacity of the coronal region.—This measurement is the space included between an imaginary plane, drawn through the centres of ossification of the parietal and frontal bones, and the inner surface of the portion of the cranium above it. The sutures or small foramina on the top of the skull were stopped with wax or putty; the centres of ossification of the parietal and frontal bones were marked; the cranium was then inverted and placed in the oval hole of the apparatus (*vide* Morton's Crania Americana) and the points of the slides were pressed against the centres of ossification of the parietal and frontal bones. The mercury was then transferred to the graduated glass measure, and the capacity of the coronal region read off in cubic inches and parts.

The *subcoronal region* was ascertained by deducting the capacity of the coronal region, obtained as above stated, from the total capacity.

Capacity of the anterior chamber.—Lines were drawn by means of a carpenter's square and a straight-edge over the ante-

rior margin of the foramen magnum, and through the centre of ossification of the parietal bones, so as to divide the cranium into an anterior and posterior chamber. Pepper seed was then poured into the skull, which was now held in the left hand with the face resting on the palm, the seed being well packed, and, by means of a stiff piece of steel, the seeds were drawn out until the surface of the seeds corresponded with the anterior margin of the foramen magnum and the lines through the centres of ossification of the parietal bones. The seeds were then transferred to the graduated measures.

The *capacity of the posterior chamber* was obtained by deducting the capacity of the anterior chamber from that of the whole cranium.

The whole of the measurements of the internal capacity of the cranium were taken exactly as described in Mr. Morton's Crania Americana, to which I must refer, as it would be impossible to make them understood without the aid of drawings. The capacities of the anterior and posterior chambers, the coronal and subcoronal regions, are very difficult to take accurately; they will be found to be as correct as it is possible to make them; these measurements were, however, taken in the same manner in the whole of the crania, and a comparison may therefore be made between the different races from the results.

All the other measurements can be depended upon, as no error can possibly occur if moderate care is taken.

ANATOMICAL MEASUREMENTS IN INCHES, ETC.

Longitudinal Diameter.—*Greatest.*—Esquimaux, 7·6; English, Kaffirs, New Zealand, 7·4; Chinese, 7·3; Mandingo, Mauritius, 7·2; *Least.*—Greek, 6·4; Albanian, French, Spanish, Bushman, Sandwich Isles, Burmese, American Indians, 6·7; Ashantee, Hottentot, 7·0; German, Egyptian, Beloochee, Affghan, Brahmin, Gentoo, Hindoo, Singalese, Mozambique, Madagascar, New South Wales, Van Diemen's Land, 7·1.

Parietal Diameter.—*Greatest.*—German, 5·7; American Indian, 5·5; English, Albanian, Van Diemen's Land, 5·4; Greek, French, Spanish, Brahmin, Gentoo, Hindoo, 5·3. *Least.*—Ashantee, Mauritius, 5·0; Madagascar, Singhalese, Mandingo, Bushman, Mozambique, New South Wales, Sandwich Isles, Esquimaux, 5·1; Egyptian, Beloochee, Affghan, Kaffir, Hottentot, Burmese, Chinese, New Zealand, 5·2.

Frontal Diameter.—*Greatest.*—German, 5; French, Spanish, English, 4·5; Greek, Albanian, 4·4; Beloochee, Affghan, Esquimaux, American Indian, 4·3; Madagascar, Mozambique, New Zealand, 4·2. *Least.*—Van Diemen's Land, 3·6; Bushman, 3·7;

Brahmin, Hindoo, Gentoo, Singalese, Mandingo, Ashantee, Hottentot, Mauritius, New South Wales, Sandwich Islands, 4; Egyptian, Kaffirs, Burmese, Chinese, 4·1.

Vertical Diameter.—*Greatest.*—Esquimaux, Ashantee, 5·4; French, Spanish, 5·2; Albanian, English, Egyptian, Beloochee, Affghan, Singalese, Mandingo, Kaffir, Mauritius, New Zealand, Sandwich Islands, Burmese, Chinese, 5·1. *Least.*—American Indian, 4·5; Bushman, 4·6; Van Diemen's Land, Hottentot, German, 4·7; Greek, Brahmin, Gentoo, Hindoo, Mozambique, Madagascar, New South Wales, 5.

Intermastoid Arch.—*Greatest.*—German, 15·3; Mauritius, Burmese, 15; French, Spanish, English, Beloochee, Affghan, New Zealand, Esquimaux, 14·7; Chinese, Mandingo, Singalese, Greeks, Albanians, 14·6; Kaffir, American Indian, 14·5; Brahmin, Gentoo, Hindoo, Ashantee, 14·4. *Least.*—Bushman, 13·5; Van Dieman's Land, 14; Hottentot, 14·1; Sandwich Islands, 14·2; Egyptian, Mozambique, Madagascar, New South Wales, 14·3.

Intermastoid Line.—*Greatest.*—German, 4·4; Esquimaux, American Indian, 4·3; New Zealand, New South Wales, 4·2; Greek, English, Brahmin, Gentoo, Hindoo, Kaffirs, Mozambique, Madagascar, 4·1. *Least.*—Chinese, Bushman, Hottentot, Ashantee, 3·7; Albanian, French, Spanish, Egyptian, Beloochee, Affghan, Singalese, Mandingo, Mauritius, Van Diemen's Land, Sandwich Islands, Burmese, 4.

Occipito-Frontal Arch.—*Greatest.*—Esquimaux, 15·4; English, 15·1; Kaffirs, Chinese, 15; Mandingo, 14·7; German, 14·6. *Least.*—American Indian, 13·5; Greek, 14·1; Albanian, Hottentot, Bushman, Sandwich Islands, Burmese, 14·2; Egyptian, Beloochee, Affghan, Singalese, Ashantee, 14·3; French, Spanish, Brahmin, Gentoo, Hindoo, Madagascar, Mozambique, Mauritius, New South Wales, Van Diemen's Land, New Zealand, 14·5.

Horizontal Periphery.—*Greatest.*—English, 26·6; Esquimaux, 21; German, 20·6; Kaffir, New Zealand, 20·5; Mandingo, 20·1; French, Spanish, Beloochee, Affghan, Mozambique, Madagascar, Mauritius, Van Diemen's Land, 20. *Least.*—Greek, 19·1; Bushman, American Indians, Sandwich Islands, 19·4; Albanian, Ashantee, New South Wales, Burmese, 19·5; Egyptian, Brahmin, Gentoo, Hindoo, Singalese, Hottentot, 19·6; Chinese, 19·7.

Length of Head and Face.—*Greatest.*—Esquimaux, 8·6; Kaffir, 8·4; Mauritius, 8·3; New Zealand, New South Wales, Mandingo, 8·2; Mozambique, Madagascar, 8·1; English, Beloochee, Affghan, Singalese, 8. *Least.*—German, Bushman, 7·3; Greek, 7·4; Albanian, 7·5; Brahmin, Gentoo, Hindoo, Sandwich Islands, Burmese; French, Spanish, Hottentot, Van Diemen's Land, Chinese, American Indian, Egyptian, 7·7.

Zygomatic Diameter.—*Greatest.*—Esquimaux, 5·4; German, English, 5·3; Albanian, Kaffir, Mauritius, New Zealand, American Indian, 5·2; Greek, Beloochee, Affghan, Mandingo, Burmese,

Chinese, 5·1; French, Spanish, Mozambique, Madagascar, New South Wales, Egyptian, 5. *Least.*—Hottentot, 4·3; Bushman, 4·4; Van Diemen's Land, 4·5; Ashantee, 4·6; Brahmin, Hindoo, Gentoo, Singalese, Sandwich Islands, 4·7.

Internal Capacity.—*Greatest.*—German, Esquimaux, 100; English, 97·1; French, Spanish, 96; Albanian, 95·5; Chinese, 93; Kaffir, 92·2; Mozambique, Madagascar, 91·5; New Zealand, 90·5; Beloochee, Affghan, 89·3; Mandingo, 89; Egyptian, 88·6; Greek, 88·4. *Least.*—Van Diemen's Land, 78·5; Ashantee, 79·1; Hottentot, 79·6; Bushman, 79·8; American Indian, 80; New South Wales, 80·2; Sandwich Islands, 80·5; Brahmin, Hindoo, Gentoo, 84·4; Mauritius, 85·5; Singalese, 86·8; Burmese, 87·7.

Capacity of the Anterior Chamber.—*Greatest.*—German, 51; Greek, 44·7; Albanian, 43·3; English, 43·1; French, Spanish, 42·5; Chinese, 41·3; Beloochee, Affghan, 40·7; Esquimaux, 40; Mandingo, 39·6; Egyptian, 38·2; Singalese, 37·8; Burmese, 37·7; *Least.*—American Indians, 32·2; New South Wales, 32·8; Ashantee, 32·9; Van Diemen's Land, 33; Hottentot, Sandwich Islands, 33·1; Bushman, Mauritius, 34; Madagascar, Mozambique, 34·7; New Zealand, 35·6; Brahmin, Gentoo, Hindoo, 36·2; Kaffir, 37·2.

Capacity of the Posterior Chamber.—*Greatest.*—Esquimaux, 66; Mozambique, Madagascar, 56·7; Kaffirs, 55·1; New Zealand, 54·6; English, 53·7; French, Spanish, 53·5; Chinese, 51·6; Mauritius, Albanian, 51·5; Egyptian, 50·4; Burmese, 50. *Least.*—Greek, 44·3; Van Diemen's Land, 45·5; Bushman, 46·1; Hottentot, Ashantee, 46·5; Sandwich Islands, 47·3; New South Wales, Mandingo, 47·4; American Indian, 47·7; Brahmin, Hindoo, Gentoo, 48·2; Beloochee, Affghan, 48·4; German, Singalese, 49.

Capacity of the Coronal Region.—*Greatest.*—German, 26; Albanian, Esquimaux, 24; Beloochee, Affghan, 23·1; English, Greek, 22·9; Van Diemen's Land, 22·5; Chinese, 22·3; Egyptian, 22·1; Kaffirs, 21·5; Singalese, 21·4. *Least.*—Mauritius, New South Wales, 18·5; Sandwich Islands, Hottentot, 19·1; Brahmin, Gentoo, Hindoo, 19·3; Mozambique, Madagascar, 19·7; American Indian, French, Spanish, 20; Bushman, 20·1; New Zealand, 20·5; Mandingo, 20·8.

Capacity of the Subcoronal Region.—*Greatest.*—Esquimaux, 82; French, Spanish, 76; English, 74·1; German, 74; Mozambique, Madagascar, 72·2; Albanian, Kaffir, 71; Chinese, 70·3; New Zealand, 70; Mandingo, 68·2; Egyptian, 68·1; Burmese, 67·4. *Least.*—Van Diemen's Land, 56; Ashantee, 58·4; Bushman, 59·6; American Indians, 60; Hottentot, 60·5; Sandwich Islands, 61·3; New South Wales, 62·7; Brahmin, Gentoo, Hindoo, 65·2; Singalese, 65·4; Greek, 65·6; Beloochee, Affghan, Mauritius, 57.

Weight of the Skull without the Upper Jaw.—*Greatest.*—New Zealand, 1 lb. 10 ozs. 3 drs.; Mauritius, Kaffir, 1 lb. 9 oz. 4 drs.; Mandingo, 1 lb. 8 oz.; English, 1 lb. 7 oz. 5 drs.; New South Wales, Egyptian, 1 lb. 6 oz. 3 drs.; French, Spanish, 1 lb. 6 oz. 1 dr.; Van

Diemen's Land, 1 lb. 5 oz. 5 drs.; Hottentot, Albanian, 1 lb. 5 oz. 3 drs.; Beloochee, 1 lb. 5 oz. 2 drs. *Least.* — Mozambique, Madagascar, 1 lb. 2 oz. 2 drs.; Ashantee, 1 lb. 3 oz. 2 drs.; Bushman, 1 lb. 3 ozs. 3 drs.; Burmese, 1 lb. 6 oz.; Chinese, 1 lb. 4 oz.; American Indian, 1 lb. 4 oz. 4 drs.; Sandwich Islands, 1 lb. 4 ozs. 5 drs.; Brahmin, Gentoo, Hindoo, 1 lb. 4 ozs. 6 drs.; Greek, Singalese, Esquimaux, 1 lb. 5 oz.

Facial Angle of Camper.—*Greatest.*—German, 78°·30; Bushman, 77°·5; Brahmin, Gentoo, Hindoo, 76°; Ashantee, 74°·5; Hottentot, 73°·51; Egyptian, 73°·48; Beloochee, Affghan, 73°·42; Van Diemen's Land, 73°·30; Greek, 73°·16; Sandwich Islands, 73°·15; Mandingo, 73°·12; French, Spanish, 73°. *Least.*—American Indian, 69°; Albanian, 70°·20; Mozambique, Madagascar, 70°·45; Singalese, 71°; Mauritius, 71°·30; New Zealand, Esquimaux, 72°; Chinese, 72°·20; New South Wales, 72°·24; Kaffir, 72°·37; English, 72°·45; Burmese, 72°·47.

Facial Angle, with the Head resting on the Upper Jaw.—*Greatest.*—German, 87°·30; Brahmin, 83°·14; Greek, 83°·2; Albanian, Van Diemen's Land, Chinese, 81°·20; Beloochee, Affghan, 81°·8; Bushman, Sandwich Islands, 81°; English, 80°·50; Egyptian, 80°·12; New Zealand, French, Spanish, 80. *Least.*—American Indian, 74°; Mauritius, 75°; Mozambique, Madagascar, 75°·15; New South Wales, Singalese, 77°·12; Kaffir, Mandingo, 77°·24; Esquimaux, 78°; Ashantee, 78°·16; Hottentot, 78°·51; Burmese, 79°·53.

The Table on the next page shows that ossa triquetra, or Wormian bones, are found as frequently in the occipital suture in the Negro as in the European, and that they are more frequently of large size, cutting off the superior angle of the occipital bone in the former: also the number of instances in which the sphenoid is cut off from the parietal bone by a process of the temporal; the lachrymal groove formed entirely on the nasal process of the superior maxillary bone; a suture in the centre of the frontal bone, and the size of the occipital foramen in the different races. Any further remarks on this subject are unnecessary, as the Table is explicit, and shows the comparative frequency of the various points mentioned.

	Nation or Tribe.	Number of Crania.	Small Ossa Triquetra, or Wormian Bones in the occipital Suture in	In addition to the small Ossa Triquetra, one, two, or more large Ossa Triquetra cutting off the superior Angle of the Occipital Bone in	Wormian Bones in the temporal and sphenoid Sutures in	Sphenoid entirely cut off from the Parietal by a process of the Temporal Bone in	Lachrymal Groove formed entirely on the Nasal Process of the superior Maxillary Bone in	Suture in the centre of the Frontal Bone in	Occipital Foramen large in	Occipital Foramen small in
Oval-shaped Skulls	Grecian,	26	10	. . . . .	6	. . .	. . .	4	. .	1
	Albanian,	1	. .	1	1					
	Maltese,	2	1	. . . . .	1	. . .	. . .	. .	. .	1
	German,	2	2							
	French,	1	1							
	Spanish,	3	1	. . . . .	1	. . .	. . .	. .	. .	1
	Natives of Great Britain,	87	38	1	8	. . .	. . .	8	3	4
	Maniacs and Idiots,	82	40	2	7	. . .	. . .	7	5	7
	Egyptian,	11	3	. . . . .	3	. . .	. . .	. .	1	3
	Affghan,	15	4	. . . . .	2	. . .	. . .	2	. .	3
	East Indian,	25	11	. . . . .	3	2	1	. .	1	5
	Singalese,	5	1	1	1	. . .	. . .	. .	. .	1
	Total,	260	112	5	33	2	1	21	10	26
Skulls with prognathous Jaws, or the Nasal Bones flat and on the same plane. Negro from the West Coast of Africa.	Mandingo,	4	2	. . . . .	. .	. . .	2	. .	. .	2
	Iolof,	1								
	Timmani,	3	1	2	1					
	Sosoo,	2	1	. . . . .	1	. . .	. . .	. .	. .	1
	Kosso,	3	2	1	. .	1	. . .	. .	1	
	Krooman,	5	2	1	. .	1	. . .	1		
	Hansa,	1								
	Fantie,	1	. .	1						
	Attan or Appas,	2	2							
	Papas or Mahai,	3	1							
	Barconka or Moka,	2	2	. . . . .	2					
	Ibo,	10	4	. . . . .	. .	2	. . .	1	1	
	Ashantee,	61	37	2	4	6	9	1	2	4
	Colabar,	4	3	1	1	1				
	Kaunga,	3	3	. . . . .	1					
	Congo,	3	2							
	Miscellaneous Africans,	20	10	4	. .	2	. . .	1	1	6
	Total,	128	72	12	10	13	11	4	5	13
Skulls with prognathous Jaws, or the Nasal Bones flat and on the same plane.	Kaffir,	15	8	. . . . .	2	. . .	1	. .	2	2
	Hottentot,	7	4	. . . . .	. .	2	1	. .	. .	1
	Bushman,	10	5	. . . . .	1					
	Total,	32	17	. . . . .	3	2	2	. .	2	3
	Mozambique,	1	1							
	Madagascar,	3	2							
	Mauritius,	2	1	. . . . .	2					
	New South Wales,	10	7	. . . . .	. .	. .	1	. .	. .	2
	Van Dieman's Land,	2	1	. . . . .	1					
	Total,	18	12	. . . . .	3	. . .	1	. .	. .	2
Oval Skulls.	New Zealanders,	4	2	. . . . .	1					
Skull with prominent superciliary ridge.	Sandwich Islands,	5	3	. . . .	. .	1				
Oval Skulls.	Otaheitean,	1								
Broad-faced Skulls.	Burmese and Malays,	9	5	1	3	. . .	1	1	1	2
	Chinese,	3	3	. . . . .	.	. . .	1			
	Esquimaux,	1	. .	1						
	American Indians,	4	1	. . . .	. .	1				
	Total,	17	9	2	3	1	1	2	1	2

Besides the above, of which the external measurements, internal capacity, and facial angle have been minutely and accurately taken, the following have since been added in the Appendix to the Catalogue:—

Crania of convicted murderers,		5
,,	English,	1
,,	Russian (Crimea),	3
,,	Modern Greek, Constantinople,	5
,,	Armenian, ,,	1
,,	Jews, ,,	1
,,	Gipsy, ,,	1
,,	Turks, ,,	5
,,	Sikhs,	2
,,	Bengalese,	2
,,	Singalese,	2
,,	Malabar,	5
,,	West Coast of Africa,	5
,,	Kaffir,	10
,,	Hottentot,	4
,,	New South Wales,	5
,,	Van Diemen's Land,	2
,,	New Zealand,	3
,,	Fejee Island,	1
,,	Burmese,	2
,,	North American Indian,	8
	Total,	73

The following casts are also contained in the Collection:—

Casts of European crania, 16 of which are of male-factors who were executed,		22
,,	African crania,	2
,,	American crania,	1
,,	Australian crania,	2
	Making a total of,	27

No. 4. Skull of John, *alias* Rocky Whelan, hanged June, 1855, at Hobart Town, Van Diemen's Land, for robbery under arms. Confessed to the murder of five persons. He made his victim walk before him to the place of burial, and there shot him, robbed him, and then threw him into the ravine.—Forehead rather low and receding; posterior part of the cranium rather large; vertex broad and arched; sutures anchylosed.—*Donor, Dr. Atkinson, D. I. G.*

No. 7. Russian skull, from the Crimea.—Cranium oval and unsymmetrical; the right side of the frontal bone and left side

of the occiput are considerably depressed; forehead rather low and receding; skull otherwise well formed; nasal ridge highly arched.

No. 15. Skull from the Armenian burial-ground at Scutari, on the road to Kollalie.—Skull large and well formed; forehead rather retreating and small compared to the posterior part of the cranium; vertex broad and well arched.—*Presented by G. Williamson, S. S., 2nd Class.*

No. 16. Skull from the Jews' burial-ground, on the road to Kollalie.—Forehead low and receding; posterior part of the cranium large compared to the anterior; superciliary ridge high and very prominent; nasal bones arched, with a depression at their root.—*Same Donor.*

No. 17. Skull of a Gipsy, from Constantinople.—Cranium oval and well formed; forehead high; vertex well arched, and occiput well rounded; a suture in the centre of the frontal bone; nasal ridge well arched; alveolar processes perpendicular.—*Same Donor.*

No. 18. Skull from the Turkish burial-ground at Scutari. —Cranium large, round, and very capacious; forehead high; vertex high, and very well arched; occiput rounded; space for the downward development of the cerebellum considerable; nasal bones well arched.—*Same Donor.*

No. 19. Skull from the Turkish burial-ground at Scutari. —Cranium very large and capacious, and exceedingly well arched; forehead high and broad; vertex high, and occiput well rounded; facial bones well placed; the alveolar processes perpendicular, and the facial angle very high; lachrymal canal large.—*Same Donor.*

No. 23. Skull of a Sikh soldier, taken from the field of Gujerat a few days after the action on the 21st February, 1849.—Cranium has all the characters of the oval or symmetrical skulls, but it is not well formed, the anterior part of the head being rather narrow; parietal protuberance rather prominent; nasal ridge high and well arched. — *Presented by G. W. Staunton, Esq., A. S., 9th Lancers.*

No. 30. Skull of a Malabar male, aged 69. — Cranium small, but well formed; nasal ridge arched; anterior nasal aperture wide and smooth at the lower part; alveolar processes projecting.—*Presented by Dr. Roe, I. G.*

No. 32. Skull of a Malabar female, aged 26.—Forehead small; nasal ridge arched, with a deep depression at its roots; lower part of the anterior nasal aperture large and rounded off; alveolar processes broad and projecting.—*Same Donor.*

No. 53. Skull of a native of New South Wales.—Cranium

oval and well formed; forehead rather receding; space at the base of the skull for the downward development of the brain of considerable extent; several ossa triquetra; ridge for the origin of the temporal muscle of great extent; superciliary ridge prominent; nasal bones arched; anterior nasal aperture of the European form; alveolar processes of upper jaw hardly projecting; teeth deeply inserted into the alveolar processes; a deep depression on the malar bone, immediately below the external angular process of the frontal bone.

No. 55. Skull of a native of New South Wales, belonging to a tribe occupying a portion of the Darling Downs, Moreton Bay. —Cranium narrow; forehead low and receding; a ridge along the sagittal suture: superciliary ridge very prominent; external angle of the frontal bone large and strong, and the ridge leading upward from it very prominent and strongly marked; a very deep depression on the malar bone; Wormian bones in the lambdoidal and sphenoid sutures; nasal bones, and part of the right superior maxillary bone, destroyed; alveolar processes deep and projecting.—*Presented by Dr. Marshall, A.S., 11th Regiment.*

No. 56.—Skull of an aboriginal native of New South Wales district, New England, who committed murder, and was afterwards murdered by another of his tribe.—Cranium oval; forehead low and receding; a slight elevation along the sagittal suture; great protuberance at the superior transverse ridge on the occipital bone, which is very strong and well marked; superciliary ridge not strongly marked; a deep depression on the malar bone, immediately below the prominent external angle of the frontal bane; nasal ridge arched; anterior nasal aperture broad, and rounded off inferiorly; alveolar processes projecting.—*Presented by Dr. Shanks, D. I. G.*

No. 57. Skull of a native woman of the Lischenault district, Western Australia.—Cranium oval and well formed; forehead rather low and receding; a deep depression at the junction of the frontal and nasal bones; nasal bones arched; anterior nasal aperture broad, and rounded off inferiorly; a depression on the malar bones, below the external angle of the frontal bone; alveolar processes and superior maxillary bones projecting in front of the body of the bone; surface of the teeth worn quite smooth, and of a dark colour.—*Presented by T. Treen, Esq.*

No. 58. Skull of a native of Van Diemen's Land.—Cranium oval; forehead rather low; a ridge along the vertex, and shelving on each side; occiput and parietal protuberances rather prominent; superciliary ridge slightly marked; face short,

and the bones small; breadth between the eyes rather great, and a slight depression at the root of the nasal bones; a depression on the malar bones, below the external angular process of the frontal; anterior nasal aperture is rounded off at the lower part; alveolar processes are short, and do not project.

No. 59. Skull of a native of Van Diemen's Land.—Cranium oval; forehead rather low and receding; superciliary ridge marked; nasal bones small and arched, with a slight depression across their roots; anterior nasal aperture of the European form; alveolar processes do not project. This skull shows few of the characters found in the others from Van Diemen's Land.

No. 61. Skull of a New Zealander.—Cranium oval, and of a small size; forehead arched; vertex broad and well arched; neither the parietal protuberances nor the occiput project; no superciliary ridge; the space for the temporal muscle, immediately behind the external angular processes of the frontal bone, is sharp and angular; ridges for the insertion of muscles not strongly marked; face has a peculiar puckered appearance, difficult to describe; the frontal bone and nasal ridge are on the same level; nasal bones slightly arched; orbits shallow, and contracted at the nasal side by the bulging outwards of the ethnoid bone and orbital plate of the superior maxillary; anterior nasal aperture of the European form; alveolar processes slightly projecting.

No. 62. Skull of a New Zealander.—Cranium oval, and rather long and narrow; forehead low and receding; vertex well arched; ridges for the insertion of muscles not strongly marked; superciliary ridge marked; nasal bones well arched; anterior nasal aperture of the European form; alveolar processes projecting, but not the body of the upper jaw; and the insertion of the teeth are distinctly marked externally by deep grooves; teeth sound and healthy, and smooth on the surface.

No. 63. Skull of a Feejee Islander.—Cranium oval and not symmetrical posteriorly, the left side of the occipital bone being much depressed and flattened; forehead low and receding; vertex well arched, and the parietal protuberance rather prominent; several of the sutures anchylosed; ridges for the attachment of muscles not great; superciliary ridge rather prominent; nasal bones small, but arched, and the nasal processes of superior maxillary not flat, but stands erect; anterior nasal aperture of the European form; alveolar processes slightly projecting.

No. 64. Skull of a Burmese (male).—Cranium large and of a square form; forehead broad, flat, and receding; vertex

very broad and slightly arched; posterior part of the cranium broad, flat, and quite perpendicular. The space for the downward development of the brain is extensive; transverse diameter of the skull great compared to the anterior; ridge for the attachment of muscles not great; superciliary ridge marked; suture anchylosed. Face broad and flat; breadth between the eyes is not great; nasal bones arched; anterior nasal aperture of the European form; alveolar processes slightly projecting, surface of the teeth smooth and flat; and their sides covered with a dark incrustation.—*Donor, J. R. Taylor, Esq., 80th Regt.*

No. 65. Skull of a Burmese (female).—Cranium of a square form; forehead high and well arched; superciliary ridge not marked; vertex broad and well arched; occiput broad, flat, and perpendicular; space for the downward development of the cerebellum great; transverse diameter of the skull great compared to the antero-posterior; face broad and flat; great breadth between the eyes; nasal bones almost flat; anterior nasal aperture wide and rounded off at the lower part; alveolar processes projecting; teeth covered with a dark incrustation, but their surfaces smooth.—*Same Donor.*

No. 67. Skull of a North American Indian from Lake Huron, probably one of the Huron Tribe. It appears to have belonged to a young person.—Cranium oval and well formed; forehead high and well arched; and without any superciliary ridges; vertex broad and flat; parietal protuberances prominent; occiput rounded; large ossa Wormiana in the lambdoid suture. Base of the skull presents nothing peculiar; great breadth between the eyes; nasal bones almost flat; anterior nasal aperture large and of circular form; alveolar processes projecting.

No. 68. Skull of a North American Indian.—Cranium large and oval; forehead low and receding; superciliary ridge strong and well marked; vertex arched; occiput projecting; transverse diameter of the skull not greater than usual; considerable breadth between the eyes; nasal bones arched, outer margin of the superior maxillary bone, which forms the floor of the orbit, broad, thick, and rounded, as also the malar bone; a deep depression on the malar bone below the external angular process of the frontal bone; no depression at the infra-orbital fossa; alveolar processes not projecting; anterior nasal aperture rather wide, and rounded off at the lower part.—*Donor, Dr. Bawtree, A. S. Staff.*

No. 69. Skull of a North American Indian.—Cranium oval and rather narrow; forehead receding; vertex and occiput well arched; ridge for the attachment of muscles not well

MEASUREMENTS OF SEVEN SKELETONS.

SKELETONS.	Height.	Measurements of the Superior Extremity.					Measurements of the Lower Extremity.					Circumference of the widest part of the Chest.	Length of Spine to the Sacrum.	Measurements of the Pelvis.								Transverse Diameter of the Inferior Outlet from the Tuberosities of the Ischium.
		Length of the Superior Extremity.	Length of the Humerus.	Length of the Radius.	Length of the Ulna.	Length of the Hand.	Length of the Lower Extremity.	Length of the Femur.	Length of the Tibia.	Length of the Fibula.	Length of the Foot.			Length of the Sacrum.	Breadth of the Sacrum.	Transverse Diameter of the Crista ilii.	Distance from the Anterior and Superior Spinous Processes.	Antero-posterior Diameter of the Brim of the Pelvis.	Transverse Diameter of the Brim of the Pelvis.	Oblique Diameter of the Brim.	Circumference of the Brim.	
	Ft. In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Modern Greek (Male),	6 1½	32½	13½	10½	11½	8	38	19	16	16	10	34½	25¾	5¼	5	11½	10	4	5½	5	15½	4¼
Do. (do.)	5 7¾	30¼	13¼	9¾	10¾	7¼	35¼	18½	14½	14½	9½	33½	25¾	4½	5	11	10	4½	5½	5½	16¾	5
English (Male), .	4 10¼	26	11½	8½	9¼	6½	30	15¼	12¾	12¾	8½	26½	22	3¾	3½	9	8	3½	3¾	4	12¼	4
Do. (Female),	4 6½	23½	10½	7	7¾	6½	26¾	14¼	11	11	7½	25½	20	4¾	4	9	8	3¾	4¾	4½	14	4
Negro (Male), . .	5 2½	27½	11¼	9	10¼	7	33	16½	13¼	13¾	9½	30	22	5	4¾	10¾	9¾	4	5	4¾	14½	4
Hottentot (Female),	4 5½	23½	10	7½	8¼	6	29	15¼	12¼	12¼	7¼	26¼	17¼	4	3¾	7¾	6¾	3¾	4½	4½	13½	4¾
Bushman (Boy) .	4 5	22½	8¼	7½	8	6	27¾	14¼	12	11½	7¼	. .	18½	4½	3	7	6¼	3	3½	3¼	10½	3½
Chimpanzee, . . .	2 1	19	6½	6½	7¼	5¾	10	5	4½	4½	6½	15¼	8¾	1½	1	3½	4	2¾	1¼	2	5¾	1

marked; transverse diameter of the skull not greater than usual, nor the space for the downward development of the cerebellum. Superciliary ridges not well marked; face not broad; great breadth between the eyes; nasal bones square and flat, anterior nasal aperture of circular form; alveolar processes projecting; teeth small, and flat on the surface.—*Same Donor.*

No. 70. Skull of a North American Indian.—Cranium oval and well formed; forehead and vertex well arched; occiput rounded; transverse diameter of the base of the skull not greater than usual, nor the space for the downward development of the brain; superciliary ridge marked; face not broad; nasal bones arched, and the space between the eyes not great; anterior nasal aperture of the European form; alveolar processes slightly projecting.—*Same Donor.*

No. 71. Skull of a North American Indian—Cranium oval and well formed, with the exception of the forehead, somewhat receding; vertex and occiput well rounded; transverse diameter of the base of the skull not great, nor the space for the downward development of the cerebellum; superciliary ridge not marked; face not broad; breadth between the eyes not great; nasal bones arched, but not highly; anterior nasal aperture large and wide at the inferior part; alveolar processes projecting and everted.—*Same Donor.*

SKELETONS.

The different measurements of the crania belonging to these skeletons are given in the Tables, and the description of each will be found under the following:—Nos. 25 and 26, Greeks; 371, the Negro; 414, the Hottentot; 423, the Bushman; the skulls of the English, male and female, are not numbered, but are marked as such, and placed at the end of the tables of the crania. The table of measurements of the seven skeletons, on the opposite page, show that the greatest height is that of one of the modern Greeks; and the lowest, that of the female Hottentot and the Bushman boy.

In the two Greek skeletons the lower part of the chest is remarkably large and prominent, which is probably produced by the custom which prevails among the Greeks and Maltese of wearing a tight belt around the waist.

There is nothing peculiar in the English male and female skeletons, except that the former is much below the usual height, and the pelvis is of smaller size.

On comparing the Negro male, which is 5 ft. $2\frac{1}{2}$ in., with

the English male, which is 4 ft. 10¼ in., the measurements of the extremities are found to be proportionally greater in the Negro. The length of the spine is, however, exactly the same in both; the length and breadth of the sacrum is also greater in the Negro. The shortness of the spine is more than compensated in the Negro by the greater length of the lower extremities, which gives it a greater height than the European. The greater number of the measurements of the pelvis are also greater in proportion in the Negro, with the exception of the inferior outlet. The pelvis has somewhat of a square form; the skull appears to be placed somewhat further backwards on the spine, but this is only apparent, and is caused by the greater prominence of the occiput, and the posterior part of the cranium being large. The tibia and fibula are straight, and not more curved in front than in Europeans; the os calcis is arched. The number of the vertebræ is also the same; the bones of the pelvis, and those of the skeleton generally, do not differ in the slightest degree, with regard to form or texture, from the English or Greek. The English female is 4 ft. 6½ in. high, being one inch taller than the Hottentot. On comparing the Hottentot female with the English female, the length of the superior extremities is greater in proportion to the height in the Hottentot; the lower extremities are also longer in proportion. The hands and feet are small and remarkably well formed, particularly the former. The length of the spine is much less in the Hottentot: the breadth and length of the sacrum are well proportioned in comparison to the height of the skeleton; the transverse diameter from the crista ilii, and the distance from the anterior and superior spinous processes, are much less in the Hottentot; the antero-posterior, the transverse, and the oblique diameters, and the circumference of the brim of the pelvis, are nearly the same in both; the transverse diameter of the inferior outlet is much greater in the Hottentot. The Hottentot female appears not to have been fully grown, as the epiphyses of some of the bones are not united to the shafts. The bones are small, delicately made, and in form or texture there is nothing peculiar: the pelvis is oval, capacious, and well formed in every particular; the sternum is composed of fine bones, lying separately in one chain.

The points of the fingers in the Negro, Hottentot, as also in the two Greek and English male skeletons, reach as low as the middle of the femur; in the English female they reach to the lower part of the upper third of the femur. The difference in length of the spine in the Negro and Hottentot, compared

to the English male and female skeletons, may be partly caused by the substance which is introduced to represent the intervertebral cartilage being somewhat smaller in them.

The Bushman skeleton is 4 ft. 5 in. in height, which is the same as the Hottentot female, and the measurements show that it is well proportioned in every part. The height immediately after death was 5 ft. 7 in. The epiphyses of all the bones are not united to the shafts; the length of the upper and lower extremities is one inch less than the Hottentot: the hands and feet are small and well formed. The length of the spine and sacrum is well proportioned, as also the sacrum. The sternum is composed of six bones:—first, the manubrium and one bone lying singly, then four bones in pairs; the lower portion of the sternum was not ossified. The pelvis of each skeleton, with the exception of the Negro, partakes more or less of the oval form.

Art. IV.—*Essays on the Natural History of Syphilis.* No. III. By William Henry Porter, M. D., Professor of Surgery in the Royal College of Surgeons in Ireland; Surgeon to the Meath Hospital and County of Dublin Infirmary; and Consulting Surgeon to the City of Dublin Hospital; &c., &c.

It has been already observed that one of the prevailing characteristics of the syphilitic poison lay in its persistence—its capability of remaining for a length of time within the system, unless expelled by the operation of medicine. True, it may lie dormant, and give no visible sign of its existence, and the patient may actually be ignorant of his condition; but there it is, nevertheless, ready at any moment to put forth its powers of contamination, and prove its presence by extending itself in some unexpected and, perhaps, unhappy quarter. A question then naturally arises—what is the limit of that persistence, or is there any? Is there any time, however remote, at which a patient can calculate on a spontaneous cure, and hope that his blood may at length be purified from the polluting influence of the poison: or, once having contracted the disease, must he bear it with him to the grave if he submits not to medical treatment? Perhaps no question ever exercised a more powerfully practical influence on the health and happiness of mankind, although seldom put distinctly and prominently forward. From John Hunter, the ablest, if not the first, writer that turned his attention to the natural history of syphilis, we derive two remarkable propositions bearing upon this part of the subject: one, that the venereal disease possessed no power of relieving

itself, or of recovery, and must go on progressing and perhaps increasing, unless driven out by mercury; and the other, that mercury was really a specific, and capable of so driving it out and eradicating it in every instance. It is evident that the first of these may admit of two interpretations, one having reference to the symptom, the other to the poison from which the symptom proceeded; and that, viewed in the former of these aspects, it was not only erroneous, but likely to occasion great and grievous error. For example, if a surgeon had a chancre or other venereal ulcer to deal with, and felt firmly convinced that it never would, and indeed never could heal, but must of necessity go on increasing and becoming worse until conquered by mercury, assuredly but the one practical course lay open before him, and he could scarcely be blamed for following it. I think it may be inferred from Hunter's argument on the identity of the poisons of gonorrhœa and syphilis that he entertained that opinion himself,—at all events, proceeding from him, it was adopted on his authority, and followed up with a zeal and pertinacity that proved how highly that authority was valued. During the time this doctrine prevailed, the employment of mercury was unsparing and profuse. All sores, almost without exception, occurring on the genitals, being regarded as syphilitic, were, of course, treated by the specific: if they recovered, well;—if they did not, their obstinacy was attributed to a superior venom in the disease which it was necessary to kill, and the treatment was pushed on to an extent and persevered in for a time that to our modern experience easily explains, not only the prejudices created against it, but the mischiefs it actually wrought. It is unnecessary now to stop to prove that this opinion of the persistency of the symptom was entirely erroneous. When it was subsequently discovered that numerous ulcers on these parts were not syphilitic at all, and when mercury came to be dealt out with a far more sparing hand, it appeared that all ulcers, of whatever nature, might be healed without it, and that only in a very few could anything like unmanageable obstinacy be observed. The disease then was allowed numerous opportunities of running its own course, and it was seen that even genuine syphilis, so far from exhibiting this uniform tendency to grow worse, sometimes showed a remarkable mildness of symptom, and always a disposition towards the healing of one sore previous to the breaking out of another. A remarkable change was thus effected on professional opinion, and, as has generally happened in the history of syphilis, it ran towards an opposite extreme: many surgeons adopted the idea of the disease being susceptible

of a spontaneous cure, and that, as the sore could heal, and the symptom be removed without mercury, so the whole disease might wear itself out independently of medicine or medical treatment. But this opens up the second phase in the proposition with which I started, viz.:—Can the blood, once tainted with the syphilitic virus, become again pure by any unaided effort of the constitution? Can this poison be localized and thrown off by the formation of an abscess, or eliminated by the breaking forth of a cutaneous eruption, by perspiration, or other critical discharge, as so often exemplified in other blood-diseases?—or can its unhealthy condition be gradually and slowly removed by those operations which are constantly, although imperceptibly, working the most important changes in the human frame? In a word, is syphilis in anywise susceptible of a spontaneous cure, or is its character as differing from every other blood-disease fully sustained in this respect also, that, once contracted, all efforts of unassisted Nature are totally inadequate to its removal?

But, previously to entering on an investigation of this point, it will be necessary to determine what syphilis is, or rather what may be the symptom or symptoms, the presence of which will prove at once and beyond dispute the existence of the poison in any individual; and then, in the case of any supposed cure, some means must be devised for ascertaining that the poison is really and truly gone, for it has been proved that a patient may be deeply tainted without being himself aware of the circumstance. And first it seems quite clear that no chancre, let its character be ever so distinctly marked, can be admitted as an infallible test. When it became an ascertained fact that all sores situated on the genitals might be healed without mercury, the next step ought to have been to endeavour to distinguish and mark off the particular one that would or would not be followed by constitutional symptoms; and to ascertain whether many were so capable of contaminating the system, or, if there was only one; with the diagnostic characters of each respectively, in short, to discover whether any chancre could be unmistakably recognised as venereal. But the inquiry took no such useful or practical direction: on the contrary, the chief object seemed to be to determine statistically the proportionate number of cases subsequently affected with secondary symptoms, an inquiry that could not be carried out, because all parties had not agreed on the secondary symptom that was unquestionably syphilitic. Accordingly, the results were anything but uniform. One observer stated the average of contamination to be one case in three; another, one in six; a third, one in ten; and the most trustworthy

report on the subject makes the number so low as one in fifteen: but no one attempted to point out the genuine characters of the syphilitic sore, and in the absence of this information all other, however ingeniously designed and elaborately worked out, became worse than useless, because it created a doubtful and uncertain practice. If fifteen persons apply to a surgeon for advice, it is of small moment to him that he believes or even that he knows fourteen of these are not seriously affected, unless he is able to point out the unfortunate fifteenth, and especially when a failure in his guess (for guess it only is) may involve such very important consequences. I have already on a former occasion examined the experiment of inoculation as practised for the purpose of diagnosis, and showed its insufficiency: it only remains, therefore, to see if there is anything in the sore itself on which reliance can be placed. Of late years very great stress has been laid on the fact of the chancre having a hardened base, even to the extent of making it, if not the test of syphilis, at least the warrant for the administration of mercury, and to a limited extent with reason, for induration has at all times formed part of the definition of a venereal sore. But, regarded in a scientific point of view, it must be rejected, for Hunter himself remarked that many sores which have no disposition to heal have so far the same character; and Ricord, who is the great authority on the subject, and who states distinctly that the non-indurated sore will not be followed by constitutional symptoms, is compelled to acknowledge that the truly indurated ulcer is occasionally not so followed either. Lastly, it may be observed, that other practitioners have certainly met with and described constitutional results as succeeding the non-indurated sore, and, therefore, when all the evidence is taken and compared, it must be conceded that the chancre affords no unquestionable proof of the presence or absence of the syphilitic taint. The non-sequence of a secondary symptom offers no proof that the disease can cure itself: it may not have been syphilis at all.

And next with respect to bubo. It is now pretty generally known that Ricord, and those who take their opinions from him, regard the glandular affections of the groin as twofold: one, the suppurating tumour which succeeds the non-indurated chancre, and is never followed by constitutional symptoms, in fact, which has no claim to the name of syphilis at all; the other, the hardened knot which attends on the indurated chancre, never suppurates, but is always and without fail the forerunner of some secondary affection. In other words, this knotted, gnarled gland is a diagnostic mark of the certainty of future contami-

nation, and if the accuracy of the observation be established, becomes at once a test of syphilis. Now it seems perfectly impossible that such opinions should have been authoritatively stated, unless on some strong foundation, or that they should be received if the ordinary experience of the profession did not in some respects sustain them, yet in either case it appears extraordinary that they should be the result of modern discovery. They refer to a plain and simple symptom, open to observation, obvious to the senses, and situated in a spot where it could not fail to attract attention, yet with all this plainness and simplicity of such importance as to be decisive of the fact of syphilitic contamination; and this symptom has during nearly four centuries of anxious investigation escaped all notice until a comparatively recent period, and even now, when announced, by no means commands a ready assent. For my own part, I cannot coincide with these views. In common with many others, I have been accustomed to consider the true syphilitic bubo as essentially suppurative in its nature; that it is occasioned by the absorption of the poison, of which there is often sensible evidence in the presence of an inflamed lymphatic leading from the chancre to the gland, and, as it were, tracking and marking out its course; and farther, that it may be an effort of Nature to localize and eliminate the poison on its first introduction into the system, and, in case of failure, never repeated. Unfortunately, I cannot tell whether the poison is ever thus arrested and carried off, because I cannot be undoubtingly certain that any bubo is syphilitic, and because, when there might be proof of its nature, it does not occur: I know of no instance of a bubo occasioned by the absorption of matter from a secondary ulcer after the system has been thoroughly contaminated. On this head I have lately seen it stated by an able writer that "in those instances in which the irritation of the lymphatic glands is the greatest, and where, consequently, we have the best evidence that the morbid matter has entered them, there is *very seldom* indeed any secondary syphilitic affection." I have especially noted the words "very seldom," because I believe they exactly express the true state of the matter, namely, that secondary affections rarely follow a suppurating bubo, but that the circumstance of the suppuration or not by no means creates a pathognomonic distinction. I have, at the moment at which I write, a young man under my care in the Meath Hospital, with a deep excavated ulcer of the throat, who had one of the best examples of indurated chancre I ever saw, and who has a large ulcer in the groin, the sequela of a suppurating bubo. There is also in the same ward a good

specimen of the syphilitic lichen on the person of a man who has at the same time an ulcerated bubo at the groin. These cases are not in themselves conclusive, but they are sufficient to throw a doubt on the universality of Ricord's positions, and to show that the condition of the groin, instead of proving a valuable diagnostic, or affording a satisfactory testimony of the constitutional condition of a patient, is in reality of but very questionable importance. As a suppurating bubo, then, may occasionally, however seldom, follow on the genuine syphilitic chancre, so it is perfectly certain that it may be produced by a number of other causes; and, therefore, its presence or absence can furnish no unquestionable evidence of the presence or absence of the venereal taint.

Finally, with respect to the constitutional symptoms, the eruptions, sore throat, ophthalmia, and others, although they are generally so distinctly marked and so very characteristic that few surgeons of experience are at fault in determining the nature of any given case; yet it cannot be denied that doubts will occasionally arise, and difficulties present themselves, that even experience cannot always cope with. Occurring in such varied forms that they may almost be said to simulate every known form of cutaneous disease, possessing only the vague and uncertain characteristic of being of a "copper colour," and even varying in the intensity of that colour according to the influences of heat, exercise, passion, and other causes of excitement, the eruptions have always proved a source of difficulty and confusion to the syphilitic pathologist. Few have attempted to reduce them within the limits of classification, and of those who commenced the undertaking none have completely and satisfactorily succeeded. Besides, it may be observed, that surgeons are not universally agreed as to what is or is not a true and genuine syphilitic eruption—that even at the present day we have some stating that gonorrhœa may be succeeded by a cutaneous affection, and others averring that even of those which are plainly and undeniably venereal, there are two forms or qualities, a mild and a severe one. I grant that to the experienced eye a well-marked papular or scaly eruption affords an evidence which the surgeon is disposed to receive without hesitation and act upon with confidence, but that is not the point at issue: the real difficulty is, that there may be an eruption not so clearly marked, not so well developed, or so characteristically defined, as to render mistake impossible, and, therefore, that an opinion based on this particular symptom may prove erroneous. And, passing further on to the consideration of the sore throat or the sore eye, the diseased testicle or

the diseased bone, or any other advanced and formidable shape the malady may assume, we find the same observations apply: syphilis in its various phases and forms leaves no part unscathed; it attacks the eyes, the ears, the nose, the throat; it pulls away the hair, the teeth, and sometimes, it is said, even the nails: it simulates a multitude of diseases, but, in return, a multitude of diseases simulate it, and hence it follows that as no symptom hitherto mentioned can be unmistakeably predicated of syphilis, so the disappearance of any of the symptoms hitherto mentioned can be no proof of a spontaneous cure: the disease may not have been venereal at all, or, being so, may have been merely withdrawn to lie dormant for a time. It has been sufficiently shown that the poison may remain for years in the blood without affording any sensible evidence, save one, of its presence there, or occasioning any symptom, save one, to create inconvenience or excite alarm. I have already spoken of that single solitary test which amongst blood-diseases is peculiar to syphilis alone, namely, a capability of transmitting the poison to the fœtus in utero. If this occurs to any individual, I care not what kind of chancre he may have had, or what character the eruption bore: I care not what other symptom might have been present, or whether there was any or none; if the parent produces a pocky child, that parent is contaminated with syphilis.

In applying these observations to the question under consideration, it cannot be denied that to a superficial inquirer the disease seems to show a tendency to wear itself out by passing through a number of patients, and something resembling the same disposition may be observed in the individual; for instance, it has been frequently remarked that the same woman, commencing with putrid abortions and red and decomposed children, will, in going through several confinements, produce each time an apparently less tainted offspring, until at length the disease appears so mild that the infant is capable of being preserved by medicine; and if such can happen with the individual, it may be assumed as presumptive evidence that the disease might be exhausted by passing through the many. Again, it is a matter of observation that in societies, as in the single person, the disease seems to change under the influence of time, and to become extremely mild and easily manageable; that its symptoms gradually assume an almost harmless character, and yield so easily to the most common applications, as almost to prove that syphilis may be anything but a formidable malady: and it is, I believe, the opinion of many practitioners at the present day that the venereal disease

is not only no longer the terrible infliction it originally was, but that its nature has been materially changed for the better even within their own experience. All this is apparently true. Perhaps there are men amongst us now, as there were in the first century after its appearance, rejoicing at its subsidence, and calculating the period when it should vanish altogether, and be no more seen: but they will be disappointed; for, like as the young man, confident in his cure, and safe in the fancied enjoyment of perfect health, contaminates a wife, and produces a pocky offspring, so occasionally some marked and fearful symptoms break out in a community, to show that in its quietude the monster was not dead, but sleeping.

In treating of any disease, it is assumed that the symptoms are not exactly the same in form and intensity in every person seized: that some suffer severely—others in a mitigated degree; in fact, that however they may be identical in character, they are different in violence and duration; and these variations are regarded as depending on the exciting cause, on the constitution of the patient, or any of the circumstances familiarly known as modifying and influencing morbid actions. But in syphilis something more may be observed, and varieties, particularly with respect to unusual and extraordinary exacerbations, are occasionally seen, that can only be explained by the existence of some peculiar qualities within the poison itself. Thus it frequently is, or seems to be, acted on by the mysterious and inexplicable agencies that occasion epidemic affections in general, and every practitioner must have observed the occasional prevalence of some one form or some one symptom—that at one time chancres shall be phagedenic, at another, Hunterian, or that some form of eruption more than another shall especially prevail; but the circumstance to be chiefly noticed as calculated to prevent the total subsidence or disappearance of the disease is, that the syphilitic poison, though ever so weak, and seemingly just worn out, is susceptible of sudden renovation, and may be roused up and restored to its originally destructive activity by causes purely accidental. It has, for example, been gravely stated that the original outbreak of the disease—or, as it has been fancifully called, the great epidemic of 1493–5—was nothing more than the exacerbation of some formerly well-known malady, which aggravation was caused by the assemblage of strangers and the crowding of the city at the siege of Naples: and it has been frequently remarked that the collection of large bodies of men, and the admixture of inhabitants of different countries, have generally been followed by some severe though temporary in-

crease of syphilitic affections. M. Parent Duchatelet, in his remarkable work on the prostitution of Paris, affirms that there is a pretty regular decennial decrease in the virulence and number of syphilitic maladies ; but he also notices occasional exacerbations of them under certain circumstances, and indeed it is quite clear, that with such regular subsidence, some renovation must be necessary, or it would soon disappear altogether. He says, that in the years 1814 and 1815 the amount and severity of these affections were so augmented as to throw all the sanitary regulations of the city into confusion. This he attributes to the influx of the prodigious numbers of foreign troops in those years into Paris and its vicinity, and doubtless the numbers of such licentious visitors must have had their effects, as well as the fact of their bringing with them a new or fresh infection. On this subject the paper of Mr. Fergusson on the disease as it appeared in Portugal among the British troops engaged in the Peninsular campaigns, is highly interesting, and his opinions deserving of attention. He observes that there seems to be an inherent principle of deterioration and decay in every department of living nature when restricted within certain limits. Human families waste away and disappear under the influence of too close marriages; the qualities of animals are impaired by what is termed in-and-in breeding; even the seeds of vegetables require occasionally to be transferred to different soils ; and the effect of a neglect of such renovation or renewal is in no instance (medically speaking) more conspicuous than in the loss of the protective properties of the vaccine lymph. He then proceeds to argue, that were it possible to restrain or confine a community or a country so entirely within itself as to preclude all exterior communication, the venereal disease in such place might be expected to follow the general rule, and gradually fade away and disappear ; but as such restriction is manifestly impracticable, the idea of its total subsidence from such a cause is purely chimerical. Then, as to the effect of an intercourse being established between persons that had been perfect strangers, in renovating and restoring the full activity of the virus, the medical history of the Portuguese campaign affords an impressive and important lesson. At the time of the departure of the expedition the aspect of the disease in Great Britain and Ireland was as it ever had been. There was no exacerbation, nor anything to attract attention or excite remark. The troops themselves left their own shores altogether free from complaint, and fit for immediate service ; therefore any contagious complaint from which they suffered afterwards must have been derived from

the inhabitants of the country in which they landed : and the disease as it existed amongst this people was so mild and so entirely devoid of acrimony, that they absolutely disregarded its presence, and never permitted it to interfere with their ordinary avocations. It must be observed that, at the period of which I speak, the Continent of Europe had been long sealed to the English, and our soldiers were as much strangers to the soil of Portugal as if they had come from another world ; any contagious distemper, therefore, contracted there may so far be considered as a new one. They did contract syphilis, but a syphilis so loathsome and so uncontrollable as almost to realize the description of its first and earliest visitation. "In the British army," says Mr. Fergusson, "it is probable more men have sustained the most melancholy of all mutilations during the four years that it was in Portugal, through this disease, than the registers of all the hospitals in England could produce in the last century." It seems plain, then, from these details, that any principle of decay that may exist in the virus of syphilis may be arrested and repaired by an intercourse with strangers, and consequently, in the present condition of human affairs, there is no possible chance of its ever being permitted to wear itself out.

One very important practical question obviously suggests itself here : Why, if the disease can wear itself out and disappear from a community—why has it never so happened, or at all events never been recorded ? Such an event would have been too remarkable not to have attracted attention ; and its not having occurred in the course of nearly four centuries may create a very reasonable conviction that it cannot happen at all. It is very true, that even at an early period, and soon after its first appearance, the whole genius of the malady seemed to undergo a change, and became so mild that many prognosticated its gradual subsidence, and some even went so far as to fix the precise period when it should totally disappear. It is equally true that at this day a change seems to be working upon it in diminishing both its frequency and its danger; but still here it is—mild and mitigated though it be—as capable of transmission, as far removed from complete eradication, and as likely (if communicated to a stranger) to produce a formidable affection, as it was at the moment of its first appearance. In like manner with the individual, there is no satisfactory evidence of the disappearance of the disease. It may become latent, and remain so during any length of time ; it may, in the successive development of its symptoms, appear to become more mitigated at each return, as has been noticed in the case

of pocky children ; but there is nothing to warrant a belief in its complete removal—no proof that a person with this mild form of disease may not communicate a severe one, and transmit a poison as active and as potent as he could have done at the first moment of his own contamination. I have avoided allusion to any case illustrative of this position, because no one will put faith in the continency of any individual ; and the ready commentary on such a case would be, that it is plainly impossible to ascertain the date of any infection. There are, however, examples on which the surgeon can place reliance, and I have known some in which the existence of the poison was proved after a surprising interval of time. One, most remarkable occurs to me at this moment, in which the persistence of the poison was proved by the birth of a pocky child twenty-nine years after the disappearance of the chancre. For all these reasons I must refuse to believe that the poison of syphilis does or can wear itself out, however respectable the authority by which the opposite opinion is sustained. On the contrary, I feel convinced that its persistency—its power of remaining in the system as long as the system itself endures—is one of the most remarkable as well as one of the most important of its natural characters.

And now, in turning our attention to the curative properties of mercury, and particularly in investigating its claims to the possession of specific powers, the first circumstance to be observed is our utter ignorance of its *modus operandi* in curing venereal. That it does sometimes so cure, it will, I imagine, scarcely be disputed; but whether by neutralizing the poison and rendering it harmless, or by eliminating and expelling it in some of those fetid discharges it occasions, or by some other hidden and mysterious process, has never been explained. In the absence of such information it is quite clear that the causes which may at any time render the process inadequate or incomplete must be equally hidden from us ; and therefore all that remains is to collect the facts furnished by experience on both sides of the question, and the conclusions they obviously lead to. And first, it must be admitted that there are now, and always have been, particular forms of syphilis, that not only refuse to yield to mercury, but are always aggravated by it; and further, that the more severe and destructive the symptom is, the less under control does it appear to be. Originally, when brought into collision with "the new and terrible disease," it produced such direful effects that "a great many chose rather to die of the disease than submit to it." Most of the old practitioners remarked that it rendered the foul and spreading ulcer

still more formidable, and several of them, though in some respects decided mercurialists, refused to prescribe it for secondary symptoms of any description. In more modern days we have had the testimony of Mr. Fergusson, that in the fearful visitation that fell upon our Peninsular soldiers, mercury always proved an aggravation ; and it is now held almost universally as a principle that all kinds of phagedenic and other unhealthy ulcerations — all forms of rupia, and other similar symptoms—are not only not cured, but decidedly injured by a mercurial treatment. Secondly, it not unfrequently happens that, after a full and fair exhibition of a course of mercury, the poison seems totally uninfluenced by it, and disposed to work out its destructive career as perfectly as if no such remedy had ever been employed. Thus it is not uncommon to see an eruption break forth, or some other secondary symptom appear, either during the administration of the mercury or shortly afterwards. In this case it seems merely incompetent to cure, but is not injurious. It certainly appears strange that one class of symptoms in a disease should be amenable to a remedy, and another not ; neither is it easy to understand how that medicine can be called a specific which seems powerless in proportion to the virulence of the disease it has to cope with : nevertheless, the accuracy of these facts cannot for a moment be denied. In like manner, it seems to be unquestionable that cases of syphilis sometimes occur, that mercury cannot, or at all events does not, cure. Turner, Swediaur, Benjamin Bell, and a number of writers of their day, have dwelt pointedly on this fact; and I think I have seen it somewhere stated that even now mercury fails to prevent the occurrence of secondary symptoms in somewhat more than half the cases in which it had been used. Now, with such a crushing array of evidence against it, one may well ask, how it can have happened that the use of this formidable medicine has been continued and persevered in for nearly four centuries ; discontinued occasionally, to be sure, by reason of its mischievous effects, but always fallen back on as the only reliable and effectual remedy ?—why such an accurate observer as John Hunter should have regarded it as a specific, or Pearson, after long and patient trials, declared that it alone could be depended on ?—and lastly, how it is, that a number of the very best practical surgeons of the present day entertain the opinion, and conscientiously act upon it, that if the poison is to be eradicated at all, it can only be effected by mercury? These are strong and apparently direct contradictions ; they can scarcely both be true, or be reconciled one with the other: and the only mode by which a correct judgment can be formed

respecting them is, by still adhering to facts and the inferences to be deduced from them. It may probably be found that the mischiefs of which we all complain lie not so much in the medicine as the manner in which it is handled.

Mercury is freely and abundantly prescribed in a vast number of diseases, and with a vast number of objects : it is given in large doses and in small ; and its use continued for a longer or shorter time, according to the effect sought for. In some of the more acute affections, as in peritonitis, it constitutes the physician's chief if not his sole dependence; whilst in several of a more chronic nature its alterative effects seem to be equally efficacious : yet neither in the acute or chronic complaint—neither in the rapid or protracted operation of the medicine—do we apprehend any of the deleterious results that render its employment in syphilis so hazardous. When prescribing for an inflamed eye or a congested liver, no one entertains a dread of inducing carious bones or sloughing or phagedenic ulcers ; and it almost seems as if a medicine employed with safety and success for any other disease reserved its mischievous powers for syphilis alone. It may be useful to inquire into the causes that occasion these remarkable differences, and endeavour to apply them to our dealings with venereal.

Without entering into any lengthened dissertation on the properties of mercury, which would be here entirely out of place, it will be sufficient to remark :—1. That it is a powerful medicine, the sanative effects of which are generally accompanied and indicated by a determination to the salivary organs: not that this result is absolutely indispensable, but that its presence is natural and salutary. 2. That it is, at the least, an equally powerful poison, the effects of which are various,—as sometimes exhibited on the skin and mucous membranes, sometimes on the fibrous structures, and at a later period on the nervous system ; but occasionally combining with any other poison that may be present in the system, aggravating the symptoms occasioned by it, and of course enhancing the danger. 3. The general or constitutional effect of mercury, on its introduction into the system, seems to be an excitement of fever, acceleration of the pulse, disturbance or loss of sleep, headach and loss of appetite, which fever continues with more or less activity during the entire time the patient is under its influence, and is always liable to be exasperated or otherwise deranged by irregularities, intemperance, exposure to cold, improper diet, and other sources of irritation. 4. When from any cause mercury disagrees, its sanative powers are suspended,

—it cannot operate as a medicine and as a poison at one and the same time—and hence in all the numerous derangements occasioned by its injudicious or improper use, its anti-syphilitic properties are never exerted. Any quantity will, under such circumstances, be administered in vain. Now in almost all cases, except venereal, when mercury is about to be employed, there has probably been some suitable preparation,—the patient is confined to his room, perhaps to his bed; he has been the subject of medical treatment, has been purged, it may be, bled, and he is closely watched and restricted as to regimen and diet. Again, the state of his general health, and any peculiarities of habit and constitution, are closely scanned, and the form of the medicine and its dose selected and administered accordingly. In syphilis all these precautions are not so much neglected as wilfully cast aside. Unfortunately for the patient, the disease does not lay him prostrate or incapacitate him for the ordinary duties of life: he is up, going about, endeavouring to follow his usual avocations: and, perhaps, in his anxiety for concealment, seeking out indulgences and courting exposures that he would otherwise have anxiously avoided. Mercury is here prescribed, not only without previous preparation, but its use is persevered in under most hazardous circumstances. Now let it be supposed that from cold, intemperance, or any similar cause, the medicine begins to disagree, at that moment its anti-venereal powers cease to operate, the sore or the symptom refuses to yield, becomes stationary, or spreads; and if the nature of the case is mistaken, and the mercury pushed farther, with the view of subduing a stubborn venereal affection, the consequence may be easily anticipated. Again, it must be recollected that mercury is not given to remove a symptom, but to eradicate a poison,—not to heal a local ulcer, but to cleanse and purify the entire system,—and if its use is discontinued before the latter object is obtained, the mischief will, of course, return again,—the disease will not be cured. But this is the history of a large proportion of those who take mercury for the earlier symptoms of syphilis: as soon as the ulcer is cicatrized, either under the impression that the cure is complete, or anxious to escape the restrictions (slight as they may be) that are imposed on them, they lay it aside, and, it is unnecessary to add, the poison is not removed. Here are two frequent causes of failure quite different, nay opposite in their natures, but assuredly it would be scarcely fair to attribute either to a want of specific virtues in the medicine.

There are certain forms or symptoms of venereal which mercury seldom cures, for the simple reason that it is seldom

prescribed when they are present. Thus in cases of phagedenic and sloughing chancre, sloughing bubo, rupial and tubercular eruption, and diseases of the bones, the medicine is, by almost universal consent, entirely forbidden. I am not now about to impeach the validity of this practice, or the doctrine from which it proceeds, but surely there are one or two questions worthy of consideration before this sweeping sentence of condemnation is acquiesced in. For example, has mercury been employed in any given case, and if it has, how much of its failure is fairly due to it, and how much to the venereal virus? I believe there can be no doubt that ulcers have been rendered phagedenic and spreading by the medicine disagreeing, and in the tertiary stages it is so rare to meet with any advanced case in which mercury has not been tried, or in which that trial had not been irregularly and ineffectively conducted, that really no conclusion as to the efficacy of its specific powers can be safely drawn from them. These powers seem never to have been fairly tested, or its virtues fairly examined. The same fatality that from the commencement has overshadowed the disease, has fallen on its specific remedy also,—that as the one has never been completely understood, so the other has been constantly mismanaged. Here, for example, is a medicine that all practitioners admit possesses poisonous qualities, and all persons, whether medical or otherwise, regard with undisguised apprehension, yet is it constantly prescribed without any previous preparation, continued without proper supervision, omitted at one time, resumed at another, and often persevered in to an unlimited and most pernicious extent. When any other powerful medicine is about to be employed, certain stringent regulations are insisted on,—if it, perchance, possesses poisonous properties, the greater precautions are enforced,—and if these are neglected or contemned, the blame falls, not on the medicine, but on him that dealt so unfairly by it. Not so, however, in the case of mercury; men seem to suppose that they may pursue their ordinary avocations, eat and drink as they please, brave any vicissitude of season, and risk any kind of exposure, and at the same time expect this much-dreaded medicine to exert only its kindly and curative influences on them. Now, were I permitted to speak from my own experience, I should say, that mercury is a specific in these very forms of disease, provided they are venereal. Every day I treat phagedenic chancres, in the hospital, with mercury, and let those that witness the practice speak as to the result: if I do not do so with the carious bone and the rupial scab, it is because the conviction is strong upon

my mind that they generally spring from a mixed disease, and ought not to be regarded as syphilis.

Besides these, there are numerous cases in which the medicine does not cure; not from any incompetency in itself, but that it seems to be unsuited to the condition and circumstances of the patient, and is, therefore, seldom prescribed. Many of the older practitioners, quite afraid of the mischief occasionally wrought by it, attributed to it a power of stimulating other morbid actions into activity, which otherwise might have lain dormant; and therefore in persons of bad and broken systems, or where there was internal visceral disease, threats of tubercular consumption, or strumous glandular enlargements, they hesitated to employ it at all; and in modern times, when the medicine has become in every respect still more unpopular, these prohibitory cases have not diminished in number or frequency. Few surgeons now order mercury in cases of wretched constitution or debilitated frame; and yet that extreme caution may not only be unnecessary, but lead to injurious results, for it is quite possible this miserable condition may have been induced by syphilis,—that it may, in fact, be a venereal symptom, and consequently more likely to receive benefit than injury from the specific, if specific it is. Again, the presence of visceral disease is held to form an insurmountable objection; and here the former consideration can have no place, inasmuch as it is generally believed that syphilis does not and cannot engage an internal organ. I know not how true this may be as a pathological position, but of this I am perfectly certain, that I have seen a disease exactly resembling pulmonary consumption cured by mercury, and I believe that visceral diseases are often induced by, and are actually symptoms of, that state of cachexia occasioned by the presence of the venereal virus, and ought to be mitigated, if not removed, by an antidote to that poison. Lastly, glandular enlargements, and other supposed evidences of a scrofulous diathesis, are laid down as contra-indicating the medicine; but to this proposition I can by no means agree, and, if it was true, it would be a difficult matter to say where it might be safely prescribed. But, after all, whither do these objections lead, and what do they prove? Certainly not that mercury is unable to cope with and to conquer the venereal poison, if fairly brought into collision with it, but that unhappy complications may exist in which it would be injudicious to make the trial.

It is quite manifest that, under the influence of extreme opinions, the really sanative powers of mercury never can be,

as they never have been, fairly tested. It has been proved by the experience of nearly four centuries that, under favourable circumstances, it is capable of neutralizing or expelling the syphilitic virus, and that no other substance with which we are acquainted is endowed with similar powers; but it has been also proved, by the same extent of evidence, to be sometimes incapable of curing the disease, and that it is especially thus powerless when it happens to disagree with the patient. Assuredly, the proper method of dealing with such a medicine ought to have been, not to raise a senseless outcry against it, and endeavour to drive it out of use; not to condemn it as a poison, a thing to be shunned and avoided, but calmly and dispassionately to inquire, first, whether this universal denunciation is deserved; and secondly, allowing it to possess deleterious properties, whether they may not be so mitigated or neutralized, by judicious treatment, as to become comparatively harmless. These are practical matters that may not be discussed here: it must suffice to say that, after an extended experience, I believe mercury to be a specific for syphilis, and I confidently act on that opinion. It is true, I never administer it to any patient unless he is perfectly and completely under my own control, amenable to my directions, willing to submit to any restrictions, and to obey any orders I impose. For example, I never prescribe it for any extern patient at an hospital, nor for any one, under any circumstances, whom I have reason to suspect of insubordination. I never (if it can by possibility be avoided) wish to order it for any person advanced in life, because, when continued to the extent necessary to cure syphilis, it induces a fragility of the blood-vessels that leads to apoplexy or some similar affection. There is a class of persons, pale, sickly, and hysterical, of soft and flabby structure, and leuco-phlegmatic temperament, with whom mercury is never found to agree, and, of course, with such I am most unwilling to employ it; but with these exceptions, and a few others that must occur to every practitioner of observation, I believe its use to be free from much of the peril usually apprehended from it, and might be most advantageously extended.

There is a circumstance that occasionally occurs in practice which may be mentioned here, as connected with this part of the subject: it is that, not unfrequently, after a fair and full exhibition of a course of mercury, the poison seems totally uninfluenced by it, and disposed to work out its destructive career as perfectly as if no such remedy had ever been employed. Thus, it is not uncommon to see an eruption break

forth, either during the administration of the mercury, or immediately afterwards. This is an occurrence that does not admit of doubt; it has happened too frequently not to have been observed by every practitioner; and the object now must be, not to gainsay or deny, but endeavour to understand it. Hunter, who observed this fact, thought he could explain it by supposing that, within any part about to exhibit a venereal symptom, there was previously "a disposition" to produce such symptom, and that, when once this disposition became fairly established, the process would go forward uninterruptedly, in despite of any quantity of mercury. There is even more than Hunter's usual obscurity in this expression; but it seems to imply that, when a symptom is about to be developed, certain changes occur in the nutrition and other vital processes, which changes lead directly to the production of such symptom, and end with its development; and that, when these processes have commenced, they will go forward to completion, notwithstanding the use of the antidote. I think the doctrine involved in this opinion is, to a certain extent, true, although the practical inferences are false, for he seems to regard this disposition as a diseased action, with which mercury is unable to cope, instead of an effort of nature towards recovery, with which mercury has nothing to do. It is not unreasonable to suppose that the breaking forth of an eruption may be, as in other cases of morbid poisons, an effort of nature to eliminate and expel the poison,—in short, to purify the blood. The effects of mercury may be regarded as working in precisely the same direction, but accomplishing the object in some different manner; and so far it seems possible that these two processes might be carried on in the same individual, and in the same part, without interfering one with the other. Unfortunately, too little is known of the manner in which the blood becomes contaminated with the poison, or cleansed from it afterwards, to permit of any certainty on the subject, and therefore all that can be done in this instance, as in others, is to observe the patent facts that fall within our observation, and reason fairly and truthfully upon them. Now, most practitioners, when they remark the appearance of an eruption on a patient fully under the influence of mercury, consider it as an evidence of the medicine having, in that instance, lost its specific virtues, and of the disease progressing in consequence. Such inference is apparently not unreasonable, no more than is the practice that follows, namely, the suspension or discontinuance of the use of the metal for a time. They consider that the mercury has failed to eliminate the poison or purify the blood, and they

cease to prescribe it lest it should prove injurious, thus permitting the disease to proceed without interruption for the present, but with the full intention of treating it by a course of mercury at some subsequent period. The other view, that which regards the eruption as an effort of nature for the restoration of health, and considers the mercury as likely to assist in the same work, though in a different way, will never look on the two processes as antagonistic, or incompatible with each other. For some years past I have ceased to interrupt the course of mercury even for a day, although an eruption may appear while the patient is under its influence, and I cannot call to mind having ever had reason to regret the practice; indeed, were a conjecture warrantable in so obscure and difficult a matter, it would be that a smaller quantity will suffice to effect a cure, under such circumstances, than may be necessary even in ordinary cases. It appears to be most essential that every surgeon should form distinct and determined notions on this part of the natural history of syphilis, because of its practical importance. If Hunter's views were strictly true, they would place a practitioner in such a state of uncertainty that he would be absolutely afraid to prescribe for a single venereal patient, lest his professional reputation should be ruined by a reappearance of the disease. No one can tell when the disposition to secondary symptoms is formed in any individual; it might be three weeks in one person, and three months in another: we have seen that, in some, it is never formed at all, and there is nothing to indicate the event in any. No one could be cured of syphilis unless the symptoms and sores were actually present: a circumstance contradicted by every day's experience. Such are the arguments that might be adduced by a surgeon who respected Hunter's opinions, but found himself unable to subscribe to them; by others, who esteem practical experience above all authority, the matter would be examined with much greater freedom. We know that, between the subsidence of one class of symptoms and the appearance of another, a considerable interval often exists. How much of that interval is to be allotted to the disposition? If it be the whole of it, then no person could ever be cured by mercury at all; if a part of it, in what state can the patient be said to be when he has no sore or symptom, and no disposition to the development of one? Such an expression would imply, not so much a latency as a perfect absence of disease. Now, we further know, by melancholy experience, that a man may have not one only, but a succession of pocky children, he not exhibiting a single symptom; and as it cannot be said

that he has not the disease, this fact will divide it into three periods, that of latency, that of disposition, and that of symptom, two only of which mercury can cure. This may be true, but it does not appear probable. It is difficult to imagine a latent stage of any disease, and an open and apparent one, both curable by mercury, and an intermediate one, on which it will have no effect whatever: it appears most unreasonable, opposed to all analogy, and will require substantial proof before it is accepted as truth. But if the "disposition," and the effort of nature to get rid of the poison, be regarded as one and the same thing,—as a vital process by no means antagonistic to the mercurial action, and which will not be disturbed or interfered with by it, there can be no reason for discontinuing the use of the metal, or apprehending dangerous consequences from it. No doubt, with the prevailing opinions on the subject, it is distressing to see a crop of eruption appear on a patient whilst fully under the influence of mercury, and the patient himself is not likely to feel satisfied at perceiving new symptoms spring up just as he had expected to have been released from the old. No doubt it must be disheartening to all parties to believe that all the medicine had been taken, and all the confinement and privation endured, in vain; and many good surgeons, harassed by such occurrences, decline to prescribe for chancres of five or six weeks' standing, lest this much dreaded disposition should come in their way, but wait the appearance of secondary symptoms, and then cure all together. It is only, then, for the surgeon to determine for himself the light in which he is to regard the occurrence. If he believes it an indication of the medicine having lost its specific virtues, he had better suspend its use, and wait; but if, with me, he can regard it merely as a sanitary effort of nature, not incompatible with the mercurial action, he will quietly persevere in its use, and, I suspect, will ultimately be rewarded by finding it as successful in these cases as he is accustomed to meet with it in others.

Art. V.—*Ophthalmic Hyperæsthesia considered in Relation to Strumous Ophthalmia; with practical Remarks on the latter Affection.* By Henley Thorp, M.D., F.R.C.S.I., Letterkenny.

Recent pathological investigations, and more especially those into the nature of blood diseases, have greatly tended to modify and correct our views respecting many morbid conditions previously imperfectly understood or erroneously interpreted. Several diseased states and physical alterations of structure, not long since regarded as primary or local, are now viewed as complications or consequences of some antecedent constitutional disorder, and traced in a retrograde direction, in some instances through two or even more sequences, back to their remote origin. This mode of studying diseases generally is particularly applicable to those of a scrofulous character; and the first object of the present communication is to establish the just pathological status of one very familiar member of that extensive family, namely, scrofulous ophthalmia. The inquiry is one not merely of theoretical interest, but of much practical importance; and as I believe that, in all cases of this disease there exists, of necessity, a special pathological condition, hitherto not clearly defined or distinguished from associated phenomena, I shall first bring it under notice.

Photophobia, or intolerance of light,—present, in a minor degree, in some other forms of ophthalmic inflammation,—is pathognomonic of the scrofulous disease. The mere objective symptoms present few peculiarities. In a simpler form of ophthalmia, — the pustular,—similar phlyctenulæ, pimples, and ulcers occur, without intolerance of light; and this latter occasionally exists, *per se*, without any visible alteration of the conjunctiva or cornea. Photophobia is often present independently of inflammatory changes in the eye, and these latter may exist without intolerance of light. I am, consequently, led to view photophobia, with its attendant phenomena, not merely as a symptom of ophthalmic inflammation, but as the expression of a definite and independent lesion of the nervous apparatus of vision; a lesion always present in those cases of phlyctenular or pustular ophthalmia attended with intolerance of light, and which are called scrofulous,—the cause of the most pathognomonic symptoms, it precedes for some time, and always materially modifies the progress of the disease. Ophthalmic hyperæsthesia may be employed to designate this pathological condition, in contra-distinction to amaurosis, which

expresses the converse state of defective energy or anæsthesia of the nervous tissue.

Painful and other distressing sensations in the eye, excited or increased by visual efforts, and by exposure of the organ to light, with spasmodic action of the orbicularis, contraction of the pupil, and profuse lachrymation, are a combination of symptoms familiar to all surgeons. Do these symptoms depend upon morbid irritability of the retina, or of the ciliary and conjunctival branches of the fifth? Or are both classes of nerves necessarily engaged in all cases and varieties of hyperæsthesia? The orbicular muscles of the pupil and palpebræ—the sphincters of the eye—are in powerful action. Does the stimulus of light, in exciting their spasmodic condition, act always through the same incident channels? I believe not. Under ordinary circumstances, light, which is a compound agent, causes contraction of the pupil by the simultaneous impression of its distinct principles upon different nerves. The luminous or chromatic elements are the appropriate and special excitants of the retina, while the "tactile calorific rays" operate exclusively upon the sensitive filaments of the fifth pair distributed to the iris. Consequently, there are two separate anatomical mechanisms combining to produce the same result, and adapted each to receive its own impulse from the divided energies of the same stimulus. Now, the phenomena of disease, like those of physiological action, display themselves in accordance with this duplex adaptation. That the integrity of the optic nerve is not absolutely essential to the active condition of the iris, is attested both by pathological facts and physiological experiments. Its contractile tissue responds to stimuli of various kinds, even when applied to the conjunctiva or Schneiderian membrane[a]; and the activity of the pupil in many cases of amaurosis, as well as the occurrence of photophobia in a few examples of this disease, establishes the fact beyond dispute; and, moreover, that the impression of caloric alone is capable of producing the effect is evident from a case given by Valentin[b], in which the pupil of an amaurotic boy, uninfluenced by light, contracted energetically upon the application of a heated body.

The action of the orbicularis palpebrarum, differing from that of the pupil in being rhythmic, and also under the influ-

[a] Snuffing cold water into the nostrils, and touching the conjunctiva with nitrate of silver, causes the pupil to contract (Larrey, Clinique Chirurgicale, vol. i. p. 427).

[b] Valentin, De Function. Nerv. Cerebr., p. 12.

ence of the will, is maintained by the conjunctival branches of the ophthalmic and the portio dura of the seventh pair, which are respectively the afferent and efferent nerves; but impressions conveyed along the optic can also determine the action of the muscle. This, I believe, is proved by the phenomena of disease, as well as by an experiment of Majendie, in which, after division of the fifth pair within the cranium, the lids closed upon the application of a strong light, although the previous employment of a heated substance failed to produce the effect. Thus, it appears that one or other of the incident segments of the two excito-motory arcs that control the movements of the sphincter apparatus of the eye may be dispensed with, or destroyed, without necessarily interfering with the action of the mechanism; or, in other words, that either the optic nerve, *per se*, or the ophthalmic of the fifth, may, under certain conditions, act, as it were, in a supplemental capacity, and produce the effect which, under ordinary circumstances, is the result of the combined operation of both, namely, the contraction of the pupil and the closure of the eyelids. I shall now apply these principles to illustrate more particularly the phenomena of diseased action, as displayed in the affection under consideration.

Scrofulous ophthalmic hyperæsthesia presents itself under three forms. Two of these are simply lesions of enervation; and in the other, which soon becomes a complicated or mixed affection, the objective symptoms of ophthalmic inflammation are superadded phenomena.

A child of strumous habit, suffering from gastric or intestinal derangement, is observed to show some disinclination to face the light: its hands are frequently raised to screen the eyes, and the lids are kept half closed. This morbid sensibility is greatest in the morning, when the admission of light into the sleeping apartment is productive of most distress, the *sudden glare* compelling the patient to sink his face in the pillow, or cover himself in the bedclothes. The eyes, in the course of the day, become more tolerant, but the hour is uncertain: the weakness may continue till the dusk of the evening, or cease soon after noon, or, in slight cases, at an earlier hour. *Severe pain* is no symptom of this condition: there is, at most, a dull, aching, obtuse feeling of distress, occasioned by the impression of light. The duration of the complaint is variable: one or many days may elapse; it may remit, intermit, and show various degrees of severity, before the decided symptoms of ophthalmia present themselves; or it may disappear altogether, without being followed by or attended

with any appearance whatever of inflammation or congestion of the eye. This is the history of the first form of the affection. It is evidently a lesion of the optic nerve and retina, and may be denominated scrofulous optic hyperæsthesia[a].

The next type of the disease is that which I have called complicated, because quickly followed by all the well-known symptoms of strumous ophthalmia, both subjective and objective. To the simple phenomena of hyperæsthesia just described are soon superadded phlyctenulæ and ulcers of the cornea, fasciculated conjunctival vascularity, zonular redness of the sclerotic, and other appearances unnecessary to particularize; and the sensation of *luminous glare* is, moreover, attended with *severe pain*, of a burning or shooting character, striking through the eyeball and temples, which, with profuse lachrymation and frequent sneezing, points to the conjunctival and ciliary branches of the ophthalmic, in addition to the optic, as the source of irritation.

The last of the forms under which strumous hyperæsthesia appears is, so far as my experience extends, the rarest. As yet I have had but few opportunities of studying well-marked examples. Like the first described variety, it is simple, and not commonly attended with any inflammatory affection of the conjunctiva or cornea. The complicated cases lapse occasionally into this form, the symptoms of which, manifesting themselves with the subsidence of the previous ophthalmia, may continue long to harass the patient and perplex the practitioner. It is most characterized by pain, evidently of a neuralgic description, sometimes intermitting, or even periodic, and occurring in paroxysms; occasionally confined to, or more especially affecting, one eye; darting through the orbit or one side of the head, simulating hemicrania; aggravated or excited by exposure of the eye to light; not always, however, bearing in its severity a just proportion to the intensity of the stimulus. The symptoms are often more distressing in the evening than at noon; the eye weeps, and appears slightly congested. It would be unjust to attribute these phenomena to any affection of the optic nerve or retina, whose morbid sensibility is

[a] The term "*optical* hyperæsthesia" is employed by Romberg and others to express increased sensibility of the optic nerve and retina, manifested by chromatic sensations, optical illusions, and phantasmata, occurring independently of external influences or impressions upon the organ of sight. Such phenomena are frequent accompaniments of cerebral disease, and sometimes display themselves as the result of a centric affection, even when disorganization of the optic nerve has occurred. It is unnecessary to observe that hyperæsthesia, employed in this sense, has no reference to the condition of the optic nerve and retina to which I allude,—a condition of augmented sensibility to an appropriate and special stimulus—light.

exclusively expressed by the impression of light producing a luminous glare. The lesion evidently involves the ciliary branches of the ophthalmic, and may be named scrofulous ciliary hyperæsthesia.

Thus are the three forms of the morbid condition under consideration pathologically distinct, characterized by special symptoms, and, as I believe, differently amenable to therapeutical means. Practically, the second type is the most important: it comes frequently under the cognizance of the surgeon, and, in short, is synonymous with scrofulous ophthalmia; but as I believe the lesion of enervation—the cause of the pathognomonic symptoms—to be the essential element of the disease, I have used the term "hyperæsthesia" to give due significance to the local pathological condition first in order; and the adjunct "complicated," to denote the superadded inflammatory or secondary events, of a structural nature, in the conjunctiva, cornea, &c. It may, indeed, be urged in opposition to these views, that the nerves of a part exert an important influence in all diseases, and that a disturbance of their vital endowments is essentially connected with, if not the efficient cause of, inflammation generally; therefore, that I am only attempting a useless refinement of doctrines generally recognised. But are all inflammations of the eye attended with photophobia? On the contrary, do not some of them proceed to the total destruction of the organ, scarcely manifesting throughout their course the symptoms of the affection? Or, on the other hand, it may be asserted that all catarrhal, pustular, and ulcerative affections of the eye, in scrofulous subjects, are not necessarily attended with intolerance of light; and further, that these conditions of the conjunctiva and cornea are sometimes present *previous* to the phenomena of the lesion under consideration, which must consequently be regarded, at least in these instances, as a *consecutive affection.* But such cases are rare exceptions to a general law. Sooner or later, in all strumous inflammations of the external tunics of the eye, the symptoms of hyperæsthesia present themselves, when the aspect of the case entirely changes, a new and altered impulse is given to the morbid action, which modifies and influences its subsequent progress, in a manner quite as remarkable as in the ordinary examples of phlyctenular ophthalmia, in which it *precedes* the objective symptoms. But it is not to be understood that every case of strumous ophthalmia must of necessity establish the correctness of these views, or demonstrate the different forms under which hyperæsthesia may present itself: extended observation, and a close scrutiny into the history of a large propor-

tion of cases, will generally be required. In many examples the analysis may be difficult, or even impossible, owing to the manner in which the three varieties are blended or combined. Thus, in acute strumous ophthalmia, the symptoms of the first and second types display themselves concurrently. Conjunctival congestion is coeval with the earliest manifestations of photophobia; and the phenomena of the third form rarely continue after the subsidence of the local objective symptoms, so as to enable it to be recognised as an isolated affection, although I think it probable that the greater number of well-marked examples of phlyctenular ophthalmia present in their progress, for a longer or shorter period, however obscurely expressed, the phenomena of each.

Scrofulous ophthalmia, or pustular and phlyctenular diseases of the conjunctiva and cornea, attended with photophobia (complicated ophthalmic hyperæsthesia), present themselves under the following conditions:—

1. As a subacute affection in children sometimes otherwise apparently healthy.
2. In a more chronic form in young persons of a decidedly strumous habit.
3. As a relapsing disease in patients who have been the subjects of one or more previous attacks.
4. As occurring intercurrently during the progress of other strumous disorders.
5. In connexion with impetiginous and eczematous eruptions of the scalp and face, or of the surface generally.

Cases of phlyctenular ophthalmia, in young persons of an apparently sound constitution, and otherwise seemingly in the enjoyment of good health, are occasionally presented to the practitioner. The subjects of this form of the disease are sometimes even ruddy, robust, and well fed; the attack is generally rather sudden, and attended with no inconsiderable amount of febrile excitement—hot skin, furred tongue, and hurried circulation; the symptoms of the precursory hyperæsthesia are quickly followed by phlyctenulæ and conjunctival injection; the attack is connected with gastric or intestinal derangement, and is often traceable to some error in diet,—in one patient a meal of unripe gooseberries occasioned the symptoms,—although, indeed, the directly exciting cause is not always evident. The propriety of applying the term "strumous" to this particular form of ophthalmia has been called in question by some surgeons of eminence, and it has been suggested that the expression should give place to one more appropriate or less objectionable. However, there can be little doubt but

that the specific constitutional disease may exist in a latent condition, with many indications of sound health, both physical and functional. Who has not observed the unexpected manifestation of tuberculosis under circumstances defying the best prognostic ability? Where the general condition exists, the most trivial cause may occasion its local development in any organ, and why should the eye be exempt from the operation of this pathological law? The *physique* is not always a certain test, and the ophthalmia itself must be regarded as a proof of the constitutional taint.

But the disease for the most part prevails amongst children of a decidedly strumous appearance, and is usually developed more slowly: the matutinal photophobia and transient conjunctival blush, sickly aspect, pale and bloated face, white tongue, and offensive breath, are generally present for some time previous to the decided outbreak of the local symptoms.

The relapsing tendency of scrofulous ophthalmia is too well known to require more than a passing comment: I may, however, remark, that when relapses do occur, they sometimes present, at first, the simple pustular, and not the true phlyctenular character: the penicillated and partial vascularity of the sclerotic conjunctiva may be present for some days, without the phenomena of hyperæsthesia, or any affection of the cornea; and the timely employment of proper remedies may cut short the disease, and prevent its lapsing into the more serious phlyctenular form.

When strumous ophthalmia occurs in the course of congenerous affections, it is found to be greatly influenced by their progress and symptoms, and its treatment must be conducted with a cautious regard to this important circumstance, that it is often vicarious or supplemental in its character, subsiding and reappearing, or alternating in its attacks, with the manifestation of the same cachexia in other parts or organs. This fact was remarkably illustrated in the case of a little girl, lately under my care for strumous disease of the hip-joint, which terminated in luxation and abscess. A sinus existed in the inguinal region. This child suffered from repeated attacks of ophthalmia; and the closure of the opening in the groin, or the diminution of the purulent discharge, was often the first indication of the coming mischief. In this patient also I had an opportunity of observing, on two occasions, that form of ophthalmic hyperæsthesia which I have denominated "ciliary."

The combination of ophthalmia with pustular and other eruptions of the scalp and face is a circumstance of frequent

occurrence: and here it may be questioned if the ophthalmic surgeon does not too often entrench upon the domain of the dermatologist. The conjunctiva, being a portion of the general cutaneous integument, is liable to similar diseases; and I entertain no doubt but that impetiginous, and other affections of the skin accidentally engaging the eyes, have occasionally been treated for ophthalmia simply, without a proper recognition of their true nature and origin. I shall presently give a case in point.

The treatment of strumous ophthalmia, like that of all kindred affections, is a matter of much difficulty: no local manifestation of the same constitutional derangement requires for its successful management a larger share of patience, vigilance, and practical skill; and whether we regard the importance of the organ attacked, the often intractable character of the disease, the uncertainty of its progress, its perplexing relapses, or its great frequency, the subject is one of paramount consideration; and the copious practical observations in the several treatises on ophthalmic surgery afford ample evidence that its study has not been neglected. It is, therefore, with some hesitation that I venture upon a path so often and so laboriously traversed by other observers, to seek for new remedies, or develop fresh pathological views; yet, as a few precepts of much value are sometimes merely glanced at, or insufficiently enforced, I may be excused dwelling more particularly upon them. I shall also give the result of my own experience as to the adaptation of certain remedies to particular forms and stages of the disease. In no malady has the unscientific and empirical practice of routine operated more prejudicially than in the one under consideration. Scrofulous ophthalmia cannot be judiciously treated according to any particular system or plan; indeed, few diseases require a nicer adjustment of a considerable number of resources to as great a variety of pathological states, both local and general. The indications may occasionally be doubtful or obscure, still, they can generally be fulfilled, and a just appreciation of them is essential to success.

Although strumous ophthalmia presents much diversity in its mode of attack, the great majority of cases will be found to arrange themselves under one or other of the five forms just indicated; I could, therefore, most conveniently, and perhaps advantageously, discuss its treatment under corresponding heads, but, in order to illustrate more fully the views I entertain respecting ophthalmic hyperæsthesia, I shall venture to

arrange my practical observations with reference especially to this lesion, and in accordance with the description I have given of its three varieties.

That form of photophobia first referred to, and which is the expression of scrofulous irritation of the optic nerve and retina (optic hyperæsthesia), is the earliest symptom of a considerable number of cases of phlyctenular ophthalmia. It can often be recognised for many days before the true inflammatory phenomena present themselves; and I am certain that, by proper management, the accession of the latter can often be completely prevented. When, therefore, intolerance of light is first observed in a child of strumous habit, and is attended with the precursory symptoms of gastric derangement already mentioned, more especially if the patient had been already a sufferer from previous attacks, let the treatment be commenced at once; here active depletion is contra-indicated, the aspect of the case forbids it, and the sooner the child is prepared for the exhibition of tonics, the better; and with this view (preceded, in some cases, by a gentle emetic) the greatest benefit will be derived from a combination of gray powder, rhubarb, and dried soda, exhibited at bedtime, and a mild, bitter infusion, with sulphate of potash, on the following morning. After these medicines have been a few times repeated, the tongue will be found cleaner, and the digestive organs much improved; and now the remedy most deserving of trial is quina,—it fully merits all the praise Mackenzie has bestowed upon it: I know of no tonic, in the treatment of strumous ophthalmia, of greater value or more general application: under its use the appetite improves, the bodily vigour is increased, and the intolerance of light diminishes or disappears; nor is it necessary to postpone its use until the tongue becomes quite clean. In cases where the digestive organs continue rebellious, and at the same time tonics are indicated by the general condition of the patient, the quina may be commenced before the alterative or aperient medicines are dispensed with, or it may be advantageously combined with them. But the value of various *adjuvantia* must not be lost sight of: a large, airy sleeping apartment, sufficient exercise in the open air, and a simple but nutritious diet, are matters of no mean importance. In winter, the temperature of the body must be maintained by flannel next the skin, and, in summer, the shower or plunge bath may be employed; at this season, also, the hair should be worn rather short, and the head kept cool. I cannot say that I have derived much benefit from local treatment in this first form of ophthalmic hyperæsthesia: light and pure air are

the best topical remedies, and the child should be freely exposed to their influence. I feel assured that a steady perseverance in this plan of treatment will generally succeed in checking the disease in its simple form, and avert the consecutive affection of the conjunctiva and cornea. When these structures are attacked, the primary lesion of the optic nerve and retina is complicated, and the case becomes one of compound hyperæsthesia, or strumous ophthalmia, in the ordinary acceptation of the term. But, as previously observed, the advent of this disease is sometimes sudden and acute; there may be, from the commencement, much of general febrile disturbance and local erethism, with a quickened circulation and flushed face, and the early conjunctival injection be attended with considerable photophobia and lachrymation. Such attacks are frequently brought on by repletion with crude and indigestible food. Here, the clear indication is to empty the stomach in the first instance, and the prompt exhibition of an emetic is imperatively called for: a few grains of calomel and James' powder should be given at bed-time, and the pediluvium or warm bath also employed, so as to promote the action of the skin, and, on the following morning, it is desirable that the bowels should be adequately freed by the infusion of senna and sulphate of potash; topical bleeding is sometimes required, and it may be necessary to apply a few leeches to the temples, according to the age of the patient, or the acute character of the local symptoms, but the early use of stimulating eye-drops is most decidedly objectionable. I have known the greatest mischief result from their indiscriminate and premature employment: the practice is certain to accelerate the development, or increase the number, of the phlyctenulæ or ulcers, and aggravate all the symptoms. The appropriate applications are of an anodyne or sedative nature, and can be used either in the form of fomentation or vapour. Let a drachm of either of the extracts of belladonna or conium be dissolved in a pint of water, and filtered through lint; to a wineglassfull of this solution hot water may be added at any time, in quantity sufficient to make the whole of a suitable temperature for either steaming or fomenting the eyes; one or other of which processes should be put in practice at least two or three times in the twenty-four hours. At this stage the child must be confined to the house, and the purgative medicines repeated until the bowels have been moderately but sufficiently acted upon, when a most excellent alterative and tonic remedy will be found in a combination of sulphate of quina, gray powder, and dried soda: after some time it may be judicious to omit the mer-

curial, and give the quina alone, and in larger doses. In some of these cases, also, much benefit will be derived from the well-known combination of Huxham's tincture of bark with bichloride of mercury, as recommended by Sir A. Cooper. Counter-irritation is a powerful resource, and ought to be employed as soon as the more acute symptoms have subsided, or about the same time that the tonic medicines are commenced. For this purpose blisters are commonly had recourse to, but details as to their size and management are not always sufficiently regarded; the regions behind the ears and the back of the neck are usually selected, but the top of the head, over the anterior fontanelle, is also a very eligible locality; the blister on the back of the neck should be full-sized, and, in tedious cases, it may be necessary to reapply the vesicants, or keep the surface raw with Albespeyre's paper; but the salutary effects of persistent irritation, confined to one point, is doubtful, and the situation of the blister should be changed from time to time, in cases requiring prolonged counter-irritation. This is a precept of much importance, the validity of which I have often tested. Notwithstanding the best care, however, and the most judicious employment of remedies, both local and constitutional, scrofulous ophthalmia sometimes advances; phlyctenulæ form and burst; ulcerations occur in and around the cornea, and threaten to penetrate the membrane; its substance becomes the seat of interstitial abscess, or, through the diffused haziness which dims its structure, we discern the yellow semilunar streak of incipient hypopyon; the disease is present in its most destructive form, and the eye is in imminent danger. It is an anxious and distressing emergency, rendered more so by the diversified expedients recommended, and the unsettled state of medical opinion as to what line of practice should be pursued: some authorities rely chiefly upon local, and others on constitutional treatment; some employ mercury, and others, bark and tonics; the renewed application of leeches and blisters, stimulating and even caustic collyria, soothing and anodyne fomentations and vapours, and, as a *dernier ressort*, evacuation of the anterior chamber, by acupuncturation of the cornea, are different proposals, for all of which advocates may be found. When the phenomena or conditions of diseased action are complicated, the therapeutical indications are, of necessity, correspondingly embarrassing and uncertain, and it is difficult to lay down precise rules: here, a specific, primary blood disease, a secondary local lesion of the optic and other nerves, and an inflammatory complication, influenced by, if not immediately depending upon, this lesion,

and modified by the antecedent constitutional tuberculosis, are the different pathological conditions to be kept in view in devising our remedies.

Now, the most advantage will be derived from the adoption of a system of treatment combining many of the resources above specified: calomel or gray powder, with quina and extract of conium; the application of a blister to one or other of the situations already indicated; leeches, which are occasionally required to relieve congestion, or, in some cases, scarification of the lids may be practised, as a very effectual mode of emptying the vessels; the application of nitrate of silver, and the use of the belladonna or hemlock fomentations, as before spoken of, are the means indicated by a just appreciation of the complex nature of the case. Now, in cases such as we are considering, every one is aware of the great difficulty of obtaining a satisfactory view of the eye, owing to the rigidly contracted state of the orbicularis palpebrarum, and instances are known of the ulcerated and weakened corneal structure having given way during rude attempts to overcome the action of the muscle; nevertheless, the object—which is certainly one of paramount importance—can be attained, I am happy to say, without great difficulty or danger, and for some years past I have been in the habit of resorting to the anæsthetic effects of chloroform for the purpose, and can recommend this agent as a most valuable expedient in all cases of intractable photophobia. Under its influence the orbicularis is relaxed, and the eye can be inspected in the most satisfactory manner; and, if necessary, a finely-pointed stick of nitrate of silver, or, which is preferable, a camel-hair brush, carrying a caustic solution of the salt, can be applied with perfect safety to the minutest ulcer. Moreover, I am satisfied that the chloroform exerts a beneficial influence on the disease, by diminishing pain and intolerance of light, and tranquillizing the patient[a]. As to the proposal of diminishing tension of the cornea by discharging the aqueous humour, and so anticipating, by artificial means, a result which the ulcerative process, if unchecked, is certain to accomplish, not having performed the operation, I can pronounce no opinion on its efficacy. In principle the practice appears sound, but, unless chloroform were employed, must be attended with much difficulty and hazard. As the effects of mercury on the

[a] This application of chloroform is not mentioned in any of the standard works on ophthalmic surgery, nor is it alluded to, so far as I am aware, in any of the recently published lectures or memoirs on the subject. Although I am satisfied that so obvious a use of this valuable agent cannot have escaped the notice of others, I believe I am the first to put it on record.

gums of young persons cannot be calculated upon as a test of its curative action, the medicine must generally be continued either until the disease yields, or the cornea is perforated. When this casualty occurs, the treatment has failed, and no further good can be expected from mercurials; these latter must also be immediately suspended should the cornea at any time show a tendency to slough; on the occurrence of this process, our chief reliance must be placed on bark. The question of the influence of light, in these acute cases, is easily disposed of: its effects are pernicious, because too powerful for the highly irritable and inflamed state of the organ, just upon the principle that irritants generally are injurious under states of active congestion: not that it should be altogether excluded, but the apartment ought to be kept moderately dark, and the eyes, moreover, protected by a shade; in fact, we should endeavour to moderate and adjust the stimulus to the altered sensibility of the organ, by admitting more or less light, just as the eye can tolerate its influence; the child will, consequently, be able to move about, gently exercise his vision, and subdue or resist that involuntary and almost spastic contraction of the orbicularis, which, when once confirmed, is so difficult to overcome.

It is a fortunate circumstance, considering the great frequency of strumous inflammation of the eye in these countries, that the resources of art, when promptly and judiciously employed, are generally adequate to avert the disastrous results which the disease, if unchecked in its acute stage, is almost certain to produce; nevertheless, the affection frequently continues, in a chronic or subdued form, for an indefinite period; in one class of cases, by far the most common, yielding occasionally, or remitting in its symptoms, perplexing both patient and practitioner by frequent relapses; or, in another and a rarer type, preserving a steady and unchangeable chronicity, not less remarkable than pertinacious, in which all action, whether healthy or unhealthy, appears suspended; ulcerations, if present, neither deepen nor fill up; the fasciculated vascularity is stationary, or but a few scattered vessels slowly extend themselves over the surface of the cornea. Now it is the former class of cases—the remitting—that so often affords the clearest demonstration of the influence the exalted sensibility of the nerves exerts upon the secondary objective phenomena. Diminution of photophobia is the surest precursory sign of a salutary change; its return or increase is a no less certain harbinger of evil. Immediately that the spasm of the lids, the

gush of tears, and sneezing upon exposure of the eye to light, cease, the reparative actions commence.

Few diseases more severely tax the ingenuity of the surgeon, or oftener exhaust the expedients of science in new and untried combinations, than chronic phlyctenular ophthalmia. Allusion has been already made to the efficacy of bark and quina; the other remedies deserving of notice are the various preparations of iron, and particularly the syrup of the iodide, the saccharated carbonate, and the citrate of iron with quina. The muriate of baryta is an alterative of much power; and cod-liver oil may be given in this, as in allied disorders, with the greatest benefit. When I prescribe the muriate of baryta, I usually combine it with the tincture of sesquichloride of iron, which I believe enhances the value of both medicines. The citrate of quina and iron is often advantageously given, with the tincture of henbane or conium. And here I may observe that, practically, a marked difference exists between the two varieties of chronic ophthalmia just referred to, and that in our selection of remedies we should be influenced by a diagnosis of the relapsing or remitting from the more steady or persistent type. Although, beyond doubt, patients will derive benefit from tonics and alteratives, however indiscriminately exhibited, still I am satisfied that the greatest amount of good will be obtained by paying attention to this point, and treating cases coming under the first division upon a purely tonic plan, reserving those medicines that are called alteratives for the other class of cases. It may further be noticed, that, in the remitting type, quina agrees best with the patient during the period that the symptoms assume characters of increased severity, either alone or combined with the extract of conium, and steel medicines in the intervals, when cod-liver oil also is most opportunely exhibited, the stomach being better able to retain and digest it than when the exacerbations are present, and the digestive organs likely to be in an irritable condition. But in the less frequent examples of the disease, when the symptoms are not observed to change so distinctly from time to time in their severity, but to pursue a course of greater steadiness and constancy, the bichloride of mercury, or the muriate of baryta,—the former dissolved in the compound tincture of bark, and the latter with the tincture of sesquichloride of iron,—are the combinations which, in my experience, are best deserving of trial.

This is the place to notice another remedy of great value, which I now frequently employ in certain intractable cases of

strumous ophthalmia, especially when complicated with chronic eruptions of the scalp, &c. The following case first suggested its employment:—

In the summer of 1853 I was consulted respecting a young lady of lymphatic temperament, fair complexion, and delicate skin, who had suffered, for several months previously, from a pustular affection of both eyes, attended with lachrymation and intolerance of light; the sclerotic conjunctiva was exclusively engaged. I regarded the case as one of those mixed forms, partly phlyctenular and partly pustular, which occasionally occur in practice, and treated it in the ordinary manner. For weeks, various preparations of bark, quina, iron, &c., were exhibited, but to no purpose; counter-irritation and different collyria were also employed, but the disease continued rebellious. The objective symptoms presented some peculiarities, which at first I was unable to account for, viz., the sero-pustules, which were most numerous around the margin of the cornea, were unusually small; they were, moreover, constantly occurring one after another, and disappearing with singular regularity; each passed through its stage of vascular red point, vesicle or sero-pustule, and minute ulcer, in the space of about ten days, so that the affection was prolonged by a constant renewal of fresh pustular spots and phlyctenulæ, that healed rapidly, and not, as in the ordinary cases of strumous ophthalmia, by the persistence and chronic progress of ulcerations originally produced. That the complaint was strumous I had little doubt: the swollen upper lip, and spongy appearance of the mucous membrane of the nose, confirmed me in this opinion; nevertheless, the case was new to me in many respects, and I remained perplexed and puzzled. At length my attention was caught by a red and scurfy appearance of the back of the neck, just where the hairs commence at the border of the scalp. This patch, I ascertained, was of long standing, and, the rest of the head being healthy, was considered so trifling as to be undeserving of notice; but I extended the examination further, and discovered a few unmistakable spots of impetigo on the arms and back. I now discovered the mistake I had committed; I was treating a case of cutaneous disease for one of ophthalmia. As the constitutional remedies already employed, under an erroneous impression as to the nature of the case, were, fortunately, precisely those which a more enlightened diagnosis would, at least in the first instance, have suggested, I determined at once to have recourse to arsenic, and prescribed the white oxide, in combination with iron and nitro-muriatic acid. At the end of a fortnight there was an

evident improvement; and in a month from the commencement of the new remedy the ophthalmic affection had completely disappeared; the red patch at the roots of the hairs was very obstinate, but ultimately yielded after the lapse of some weeks, during which it was found necessary occasionally to intermit the medicine. This case imparted a lesson too valuable to be easily forgotten, and I resolved to profit by it as soon as an opportunity offered. I had not long to wait. A strumous child, suffering from ophthalmia, and also the subject of impetigo of the scalp of long duration, presented himself. After I had given cod-liver oil, iron, iodine, quina, &c., a fair trial, and with little benefit, I directed the liquor arsenicalis, with tincture of bark. Very soon an amendment was quite perceptible, first in the eyes, and afterwards in the head affection. The remedy was continued at intervals until the cure was complete. I have since had several opportunities of testing the efficacy of arsenic in intractable cases of strumous ophthalmia, *where no affection of the skin existed*, and I believe it to be an invaluable remedial agent, when properly exhibited. It need not supersede other tonics of acknowledged efficacy, and may be advantageously combined with cod-liver oil, iron, or bark. The power of arsenic in controlling the progress of various lupoid ulcerations is undisputed, and the frequent connexion of these latter with the scrofulous diathesis is equally certain. It is rather singular that these facts should not sooner have suggested its administration as a tonic in other scrofulous disorders.

Although I regard ophthalmic hyperæsthesia in some of its varieties as the fundamental local lesion in all cases of scrofulous ophthalmia, nevertheless, it must not be forgotten, that during the progress of the disease in a chronic form, a period may arrive when the primary and secondary phenomena are to be viewed in a converse relation to each other; the nervous lesion may be maintained by the reactive agency of the diseased state of the cornea and conjunctiva; thus the complication comes to be more an object of treatment than the morbid state in which it originated—this doctrine involves no pathological anomaly—the same alteration of sequences is not unfrequently observed in the progress of other diseases. In this way only we can explain the satisfactory results of topical treatment in certain chronic cases. Local applications, therefore, come to be auxiliaries of much importance, and, of all collyria, solutions of nitrate of silver are the most generally useful, to which small quantities of wine of opium, tincture of belladonna, or tincture of conium, may often be advantageously

added when a sedative action is required; but the long-continued use of the nitrate is objectionable, from its well-known property of discolouring the conjunctiva, and therefore, solutions of other salts, as the sulphate and acetate of zinc, the bichloride of mercury, hydriodate of potash, &c., are occasionally preferable. Wine of opium is an application much used; it is too stimulating in its undiluted state, and should be mixed with equal quantities of laurel or distilled water; but as a remedy against intolerance of light few agents will bear a comparison with prussic acid; Scheele's preparation, reduced to half its strength by the addition of distilled water, or mixed with wine of opium, and dropped in the eye, will sometimes exert a really magical influence.

On the subject of counter-irritation I have little to add, further than to recommend a substance which is not very generally used for this purpose in ophthalmic surgery: I allude to iodine, a strong solution or tincture of which, applied to the outside of the upper lid[a], acts as an admirable counter-irritant. Caution, however, is requisite in its employment, to prevent its too energetic action, or any portion entering the palpebral fissure; it should be laid on carefully and *thinly* with a camel-hair brush, and by allowing time for two or three coats to dry in succession, a layer of sufficient thickness may be given to the thin integument. The application produces much pain, which continues for several minutes, and is often followed by some œdematous swelling; this, however, soon subsides, when the cuticle presents a shrivelled, dry, and yellowish appearance, but with the most marked amendment in all the symptoms, both subjective and objective.

Still, we must bear in mind the capricious character of scrofulous ophthalmia—apparent cures are too often but transitory intermissions, and a proclivity to the affection most commonly continues until the arrival of puberty, when the changes occurring in the organization at this period alter the balance of predisposition to diseased action in different structures, and the eye becomes less obnoxious to assaults. Can art establish the immunity which this crisis confers, or, as it were, anticipate the important radical changes incident upon it? I am inclined to think that the principle of establishing

[a] The application of this solution to the lower eyelid is useless, as the iodine is quickly washed away by the copious lachrymation. There is also some risk of the tears dissolving the iodine and flowing back on the surface of the eyeball: for obvious reasons the coating of the upper lid cannot be displaced in this manner. The following is the solution which I employ:—Iodine, 1 drachm; hydriodate of potash, 1 drachm; compound tincture of iodine, 1 ounce.—Dissolve.

artificial drains in scrofulous diseases generally is not always correctly apprehended—the depraved and unorganizable products of the constitutional disease, must find some local vent, or else invade the different organs and textures of the body—setons and issues eliminate the *materies morbi*, until the fundamental vice is extinguished by time, or yields to collateral agencies. They can never directly strike at the latent radical evil, but, acting as depurating channels, may prevent the deposition of heterologous products from the blood, until the establishment of the normal vital conditions of the system. Viewed in this light, setons are deserving of more general adoption in all strumous diseases; for myself I feel satisfied that in obstinate relapsing cases of phlyctenular ophthalmia, more especially those following upon or complicating chronic articular disease, when protracted suppurative action has diminished or ceased, setons may be employed with the greatest advantage, as well to avert mischief from vital organs as to preserve the integrity of the eye.

The beneficial influence of change of air in phlyctenular ophthalmia is universally acknowledged, but all practitioners may not be aware of the singular effects of a short sea-voyage in this disease. A few years ago a little boy, who had been a patient of mine for some time previously, crossed from Londonderry to Glasgow, to consult Dr. Mackenzie: he was ordered quina and a collyrium of sulphate of zinc; remedies which, although fairly tried, had already failed in my hands. The child returned in a few days, and surprising was the amendment that had taken place in so short a period; vascularity had greatly subsided; ulcers and specks, which resisted for weeks the action of the most varied applications, were half healed or scarcely perceptible; and a most inveterate photophobia had yielded, as it were, to some magic spell. I might be inclined to attribute the marked change in this instance to some accidental circumstance or coincidence in the course of this notoriously uncertain affection, but that I am aware of another case in which a precisely similar result occurred; I can, therefore, at least mention the expedient as one deserving of trial.

Although in the foregoing observations I have expressed my opinion as to the futility, or even imprudence, of forcing a child suffering from acute ophthalmic hyperæsthesia out of doors, with the view of overcoming the intolerance by exposure of the eyes to a strong light, I can speak with equal confidence, in chronic cases, of the absolute necessity of the practice. No agent possesses the same power, or exerts the

same restorative influence; its exclusion prolongs the affection almost indefinitely. But to obtain the good which this renovating stimulus is capable of exerting, the patient must not be compelled abruptly to "face the light," as is too commonly practised; on the contrary, he must be trained by slow degrees, but steadily and perseveringly, to resist the painful impression first produced, until the abnormal irritability of the retina or other nerves is exhausted or removed, a result greatly promoted by ventilation, exercise in the open air, and the other adjuvantia already noticed.

That form of hyperæsthesia which I have denominated "ciliary" is not, according to my experience, so commonly observed in connexion with strumous ophthalmia as with rheumatic and some other affections of the eyeball. I had, very lately, an opportunity of observing it as a sequela of arthritic iritis, and formerly had often occasion to witness an exquisitely painful affection of the ciliary nerves, attended with intolerance of light and other distressing symptoms, produced mechanically by the pressure of hard particles of the crystalline lens against the iris after keratonyxis,—an operation for cataract, at the time I was a student in Dublin, almost exclusively resorted to by one ophthalmic surgeon in the metropolis. My experience, however, of simple scrofulous ciliary hyperæsthesia is limited: a very chronic case under my care, after the failure of other remedies, yielded, apparently, to ten drops of liquor cinchonæ with two of Fowler's solution, given three times a day.

The substance of the foregoing observations may be briefly stated in the following propositions:—

That in all cases of phlyctenular or strumous ophthalmia there exists, of necessity, a special lesion of the nervous apparatus of vision.

That this lesion is the cause of photophobia and the other pathognomonic symptoms of the disease.

That it precedes, in most cases, the development of the inflammatory or objective phenomena; and that these phenomena are directly influenced by this condition, and but remotely by the constitutional disorder.

That the lesion in question is a state of hyperæsthesia, or exalted sensibility of certain nerves, viz., the optic and retina, and the ciliary and conjunctival branches of the ophthalmic of the fifth pair.

That the phenomena attendant upon photophobia—namely, contraction of the pupil, spasm of the orbicularis, sneezing, and lachrymation—are the results of reflex action, displayed in a morbid form under the influence of this lesion.

That inasmuch as the impression of light upon the retina is competent to excite closure of the eyelids as well as contraction of the pupil, as proved by the experiment of Magendie, already quoted, optic hyperæsthesia may be admitted to exist as an isolated pathological condition, capable of producing photophobia independently of other nerves.

That the symptoms of ophthalmic hyperæsthesia vary in intensity and character, according as the nerves referred to are separately or conjointly affected; and that physiological experiments, as well as pathological observations, sanction the division of the lesion into three forms.

That the first form (optic hyperæsthesia) is characterized by the impression of light producing a luminous or chromatic glare, attended with a peculiar and distressing, but not painful sensation in the eyes; and that its symptoms, subject to occasional intermissions, commonly precede for several days the appearance of inflammatory phenomena.

That the second or complicated variety of the lesion—that which engages all the nerves before mentioned—being quickly followed by the objective symptoms of strumous ophthalmia, can seldom be recognised for any length of time as a simple nervous affection, although invariably present in all unequivocal examples of the disease.

That ciliary hyperæsthesia (third form) is best distinguished from the other varieties by the neuralgic character of the pain, and that it more frequently follows than precedes the ophthalmic disease.

That a distinction should be made between the ordinary relapsing cases of strumous ophthalmia and those rarer examples of the disorder in which the symptoms pursue a course of greater certainty and steadiness, inasmuch as the therapeutical indications differ in the two varieties.

That in cases of phlyctenular ophthalmia attended with inveterate photophobia, where a satisfactory inspection of the eyeball is desirable or necessary, the anæsthetic influence of chloroform is the most suitable expedient.

That when scrofulous ophthalmia occurs in connexion with chronic articular, or such like diseases, and protracted suppurative action is on the decline or has ceased, much benefit may be expected from setons and issues as prophylactic remedies.

That arsenic is a most valuable agent in inveterate cases of this disease, more especially those complicated with chronic eruptions of the scalp or cutaneous surface generally.

Art. VI.—*Relation of a Case of Formation of a New Nose; with some Remarks.* By John Hamilton, Surgeon to the Richmond Hospital.

In England and Scotland, since the publication of Mr. Carpue's interesting work, several operations have been performed for the restoration of lost noses. But it is strange how little attention has been paid to the operation in Dublin, about five and twenty years having elapsed since its performance in this city. The result was, to a certain extent, not successful, and the appearance of the new nose very discouraging to other attempts. I recollect having seen it when a student. The woman was heartily ashamed of the new feature, and no wonder, as it was a small, round, snubby appendix, changing often in colour, sometimes bright red, at others of a livid white, alternating in appearance between a Kentish and a Whiteheart cherry; the temperature was also unequal. But when the operation is as successful as that I am about to relate, it is certainly a boon of the utmost importance and value to the poor patient. The nose has ever been considered a fair target for the shafts of wit; but the man who has no nose is not only disfigured and humiliated in his own estimation, but is sure of an amount of unfeeling ribaldry from many, and of being an object of repugnance to most people.

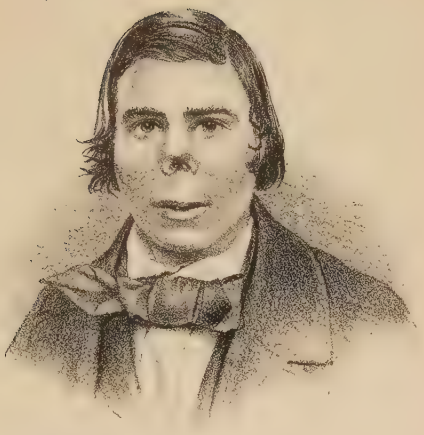
The dismemberment is rarely the result of violence. I have only met with one such case. About nine years ago a young man came to the hospital in a half-drunken state, with the end of the nose separated, and hanging on merely by a shred of skin. Almost immediately before I saw him, he had a quarrel with a comrade in a public-house, who seized him with his teeth by the nose, and, before he could disengage himself, nearly bit it off. There had been a great deal of bleeding. I readjusted it carefully, and secured it by a couple of sutures. Union took place throughout, and the marks of the accident were scarcely perceptible.

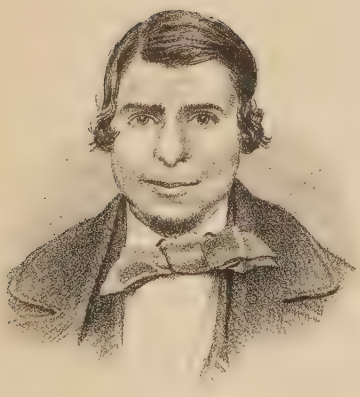
The most commonly received opinion among the public is, that the mutilation arises from the ravages of syphilis; it is the prevailing belief now, and was so more than a hundred years ago. In an amusing paper on the Taliacotian operation in the Tatler, December 7, 1710, the frequent loss of noses is accounted for by the following fable:—"Mars, the god of war, having served during the siege of Naples in the shape of a French colonel, received a visit one night from Venus, the goddess of love, who had always been his professed mistress and admirer. The result was a little Cupid. This boy, whether it was by

reason of any bad food that his father had eaten during the siege, or any particular malignity in the stars that reigned at his nativity, came into the world with a very sickly look, and crazy constitution. As soon as he was able to handle his bow, he made discoveries of a most perverse disposition. He dipped all his arrows in poison that rotted everything they touched; and, what was more particular, aimed all his shafts at the nose, quite contrary to the practice of his elder brothers, who had made a human heart their butt in all countries and ages. To break him off this roguish trick, his parents put him to school to Mercury, who did all he could to hinder him from demolishing the noses of mankind; but in spite of education, the boy continued very unlucky; and though his malice was a little softened by good instruction, he would frequently let fly an envenomed arrow, and wound his votaries oftener in the nose than in the heart."

A more practical age rejects the fable, but preserves the opinion as strong now as then, that the most frequent destroyer of the nose is syphilis. Yet no belief can be more unfounded. The strumo-syphilitic disease of the nose is in the bones and their lining membrane, and though it has its "broken arch, its ruined wall, and portals foul," the integument is rarely engaged; yet, even so, a sufficiently hideous and very characteristic feature remains, flat, with a transverse sharp depression across its centre, distorted, and with contracted and misshapen nostrils.

In the majority of instances, where we are called on to make a substitute for a lost nose in this country, the destroying agent has been lupus. This disease is sufficiently common among the scrofulous poor, and while judicious treatment can do much to arrest its course, by ignorance or carelessness more or less of the organ is infallibly lost: first the alæ, then the cartilaginous septum, then the remaining fleshy portions fall away before the destructive ulceration. I have now a case where the tip of the nose has been eaten away, with a portion only of the alæ; the remains of these have curled in on each side, and helped to close the nostrils: the deformity in such a case is rather less, but bad enough, and I am only waiting till a small extent of ulceration in the septum shall be healed, to operate. When, as in the instance which follows, the whole of the soft parts are destroyed, and nothing but the bony structures of the nose covered by skin are left, with a gaping chasm laying open the interior of the nasal cavity, the disfigurement is very repulsive. The aspect has been accurately likened to that of a skull, and is well exhibited in the drawing of my patient previous to the operation.





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A young man, of the name of John Ferguson, came to the hospital with the greater part of the nose destroyed by lupus, at least an inch of the extremity of the organ having been ulcerated away, and the diseased action still going on in the septum. By the local use of the solid nitrate of silver, and the constitutional effects of the hydriodate of potash and sarsaparilla, the ulceration completely healed, and that red scurfy eruption, so constant an attendant on lupus of the nose, was removed from the adjacent parts of the face. To prevent any relapse, the treatment was persevered in for many weeks; and as the remains of the mutilated organ offered some encouragement for the attempt, I began to consider whether I could not by a new nose remove the unsightly appearance which presented itself in this case, as it does in other similar ones, giving the face, as I have already said, the aspect of a skull.

The sides of the remains of the nostrils presented sufficiently fleshy edges, and were pretty even, but the septum was a good deal eaten away, so as to offer no central support; the portion of the bridge of the nose which remained was too prominent; but still the parts were not in such an unfavourable condition as to prevent a satisfactory result from the Taliacotian operation being hoped for. The operation I preferred was the Indian method of taking a portion of integument from the forehead. The case was favourable for this, as the forehead was high enough, the integument thick, and the base of the nose between the eyebrows broad.

The first time fixed for operation the chloroform caused such excessive vomiting that I thought it best to defer it to another opportunity. On the second occasion there was the same trouble, as, after he had become insensible, and I had pared the edges of the nostrils, he commenced vomiting again; but this time I did not desist, but went on and completed as rapidly as I could all the cutting part of the operation. The steps of the operation were as follows:—I first made a deep incision, about half an inch from the edge, all down the sides of the nostrils, and dissected off the part between this and the rim. A broad border of raw surface was thus obtained on each side. I next made a short straight cut down the centre of the nose, about half an inch from the projecting tip, and then dissected away the angles, and this made a larger bare surface at the top than elsewhere, so as to leave sufficient space for the raw surface of the transplanted portion of skin to adhere and fix itself. I had previously marked out on the forehead, with a piece of nitrate of silver, the size and form of the flap for the new nose. This was isolated by an incision down to the pe-

riosteum, the incision being carried on each side of the root of the nose to below the eyebrows, forming a neck about half an inch wide. By twisting this I turned the raw surface of the flap over, and brought it in contact with that at the tip and sides of the nose, when I found the measurement had been so just that it fitted accurately. The shape of the flap approached that of an ace of clubs, and when brought down and applied, the small projecting handle was in the situation of the septum, but not sufficient to form one.

The bleeding was very copious, both from the pared edges of the nostrils and those of the wound in the forehead, particularly the latter. I waited till it had entirely ceased, and then the flap was brought down from the forehead and carefully applied over the pared surface of the ramus of the nose. They were kept accurately in contact by a few points of suture, two on the right side, three on the left, the last being the side to which the twist of the root of the flap was made. The whole fitted well. The open wound in the forehead was closed at its lower part by sutures, the remainder filled with lint smeared with simple dressing. A little lint and simple dressing were put over the nose.

Saturday, November 29th (fourth day), the dressings were removed: everything looked well; the flap constituting the new nose was warm, and of a good colour, and the edges adherent. Lint dipped in spirit lotion covered with oiled silk was applied.

December 2nd (seventh day), I removed the ligatures everywhere; they had, in fact, begun to eat their way out—the whole edge appeared united, that on the right side presenting a perfect amalgamation of surface, so that the line of union was indistinct: the new nose quite warm and sensitive. I did not take the lint from the forehead wound till some days after; it was healthy and granulating.

At the end of the fifth week everything was most satisfactory, all in perfect union throughout, and the nose presented a most respectable appearance, though rather flat; at first it was too white, but it has now got a better colour, and is warm and sensitive. Were it even left as it is, an immense improvement in his personal appearance would have been effected by the operation. The large wound in the forehead has contracted to a small granular sore, little larger than a shilling.

January 13th (the seventh week), circulation being fully established in the new nose, I thought it time to make a septum. The usual proceeding has been, before this part of the operation, to divide the narrow slip at the root of the nose,

where the twist had been made in turning down the flap—it appeared to me better to reserve this for the last, as I should thus have the benefit of whatever circulation was carried on at this part, in bringing about the union of the septum to the place where it was to be inserted. I altered somewhat the operation of making the septum from the upper lip. The general plan has been to make two incisions in the centre, leaving a narrow, straight slip between them: the incisions are carried quite through the prolabium. This slip connected only at the upper point has the prolabium removed from the tip, and is brought up and fixed by ligature or needle to the surface prepared for it on the inside of the end of the new nose. As the lip in this man was unusually long, I thought it unnecessary to carry the incision through the prolabium; but instead of this, I merely cut a triangular piece sufficiently large, the base adherent above, the apex loose below: the point of this last was squared, turned up, and brought in contact with the pared end of the small projection of the new nose, and secured in this position by a single point of suture: union by the first intention took place. After removal of the ligature on the third day I perceived that the nostrils were contracting; this was readily arrested by the insertion of two small conical plugs of lint smeared with ointment, which, as he was a handy fellow, he managed very well himself.

In the eleventh week, the septum being firm, and the sides of the nostrils skinned over, I divided the narrow band at the root of the nose; the end was cut wedge-shaped, and inserted into a deep incision between the eyebrows, and fixed there by a transverse needle; it fortunately united at once.

The drawings Nos. 2 and 3, front and side views, will best show the form of the new nose, which is perfectly satisfactory to the man and to myself. If the engravings in Carpue's work are referred to, the same tendency to the hook-nosed form will be seen. It appears to arise chiefly from the thick integument that forms the new nose being placed over the bridge of the old one, so as considerably to increase its height, and also from the tip being drawn back by the contraction of the new septum. Although not so faultless as a Grecian, it is certainly better than a pug nose; something, moreover, may be said in favour of this hooked or Roman nose, as that which has been regarded as the type of the warrior, from William the Conqueror down to our own immortal Duke; besides, we cease to be particular when we reflect that it is here a question of nose or no nose; and the present, though not perfect, is still

fleshy, firm, sensitive, and warm; he can breathe, blow, and sneeze with it; and the best proof in its favour is, that it pleases those who ought to be the best judges of what a manly nose should be, for since he left the hospital he has got a wife by it.

Art. VII. — *Observations on the Practice of "Écrasement Linéaire" in the Parisian Hospitals by M. Chassaignac; and an Incidental Notice of the Views of that Surgeon on the Employment of Chloroform.* By K. I. O'Doherty, F.R.C.S.I.

The student of surgery will find an attendance at the clinique of M. Chassaignac more attractive than at that of perhaps any other surgeon in Paris. Apart from the varied range of disease he will find there at all times open to his investigation, he will be gratified to meet in M. Chassaignac himself a combination of the highest professional attainments, with a demeanour towards foreigners, especially British or Irish, characterized by the utmost friendliness and attention; and, moreover, a familiarity, the most intimate with the details of British surgery[a].

He may fairly be ranked at the head of the "experimental," or perhaps, to speak more correctly, the "innovating" school of operative surgeons of that city.

A profound anatomist and skilful surgeon, he would seem to have availed himself of the discovery of chloroform to give full bent to his inventive genius, in devising novel improvements in the surgical treatment of disease. This zeal for improvement, for which his magnificent wards in the "Hôpital Lariboissière" afford him an unlimited field, is indulged in with an amount of daring, of *sang-froid*, well calculated to interest, if not amaze, those accustomed to the praiseworthy caution with which Irish hospital surgeons undertake surgical operations.

Prior to directing attention to the most important of his novelties—his method of operation by "Linéair Écrasement"—I am induced to offer some observations on the results of his investigations into the action of chloroform, and on the principles he lays down for its administration. I do so chiefly because he tells us that the employment of his écraseur must be at all times subservient to the use of this agent; and likewise because of the very great importance of the principles he attempts to establish, which, if true, would enable the surgeon to avail himself of this agent without risk to his patient's life

[a] He has published a French translation of Sir Astley Cooper's works.

or his own reputation. Practitioners who use chloroform he distinguishes into two classes. The larger, or more timid, generally undertake their operations whilst the patient is yet conscious, content if, on pinching the integument, they find his sensibility somewhat benumbed. This mode of administration he condemns as worse than useless, because, in addition to being inefficient in relieving pain, it complicates the operation by acting as an excitant to the nervous and circulating systems. The other class, of a more daring type, push the administration until the full effect is produced, and occasionally only discover they have carried it too far by finding their patient in a condition of fatal coma. Now he insists that there is a happy medium between these two extremes, which is at all times attainable by the surgeon, if attention be paid to the rules he lays down.

The effects of chloroform he divides into three stages :— 1st. That of Excitement. 2nd. That of Tolerance. 3rd. That of Collapse.

Each of these stages is marked by a train of well-defined symptoms, and they merge one into the other in the order here stated.

The surgeon, he states, should never operate unless in the stage of Tolerance.

When the chloroform is carefully administered, this latter will generally follow immediately upon the primary or excited condition. It will be at once recognised by the patient being unconscious, by his respiration being calm and composed—the heart's action normal in rhythm, and the pulse firm and regular in its beat, and it will be attended with complete loss of sensibility and muscular control. The patient, in fact, will be like one in a calm, profound sleep—if his limbs be raised, they will fall back like logs on the bed, and his countenance will generally exhibit a smiling aspect. The advantages of this very satisfactory condition M. Chassaignac states, and with great truth, are not confined to the patient. As the result of his very great experience, he affirms, that whilst in this Tolerant stage, no possible danger need be apprehended by the surgeon, who may, with confidence, devote himself to his operation—a matter of no slight moment, when we reflect that usually the surgeon's attention is quite as much directed to the effects of the anæsthetic agent as to the more immediate, and, it may be, embarrassing, work he has in hand.

M. Chassaignac only permits his most trusted assistants to administer the chloroform. His directions to them are, to place the patient on his back ; to remove all covering from the

neck; to leave uncovered a sufficient portion of the chest to enable him to watch the respiratory movements; and finally to leave the pit of the stomach also exposed, as there the action of the heart, if troubled, will be most readily perceived. Having thus prepared the patient, the administration of the chloroform is proceeded with, the assistant being cautioned to devote his attention altogether to his task: he will keep his eye on the patient's features; on the motions of his chest; on his stomach—all which he is in a position to do without difficulty. In favourable circumstances he will notice in two or three minutes symptoms of the stage of excitement. The patient will probably commence talking in a rambling and disconnected manner; will possibly sing snatches of songs; his respiration will be quickened; his pulse will also increase in rapidity. As this stage progresses, spasmodic action of the voluntary muscles will take place, sometimes of so powerful a kind as to require three or four strong men to keep the limbs within bounds. This condition having lasted for a period more or less prolonged, according to the patient's powers of resistance, the second stage—that of *tolerance*—will gradually ensue. The muscles will cease to contract, and the limbs will fall back completely powerless and relaxed; the patient will cease to give utterance to his feelings, and will quietly fall into an apparently profound slumber; his breathing will become calm; the heart's action, from being excited, will be normal; the head and face will be free from all turgidity on the one hand, or abnormal paleness on the other, and his sense of feeling will have altogether disappeared. Now the period when danger is to be apprehended, M. Chassaignac states, is just when this stage is being developed. In unfavourable cases, or those in which the agent is being too rapidly administered, in lieu of this very satisfactory condition of tolerance we shall find a most alarming train of symptoms set in: the respiration will become laboured and irregular, and possibly stertorous; the heart's action will intermit; and the patient's features will either contract rapidly—exhibiting symptoms of collapse, the face being at the same time overshadowed with a deadly paleness—or it will become turgid and suffused; and if, under these circumstances, the agent be still administered, fatal coma will rapidly set in. Such is the condition to which he has given the very appropriate title of anæsthetic collapse—*the third stage.*

He affirms that the surgeon need never apprehend the advent of this stage if the assistant be advised to take warning by the plain signs it will always give of its approach. If,

keeping his eye steadily on the three points previously named, he should perceive any evidence of it in the features, respiration, or circulation, he should at once remove the chloroform and allow the system to recover. He declares that it is of the utmost consequence to pay the closest attention to this point. Of such moment, indeed, that I have repeatedly heard him express his belief that so short a delay as that of ten seconds in removing it, after symptoms of intolerance have been manifested, will be attended with imminent risk to the patient's life.

In all cases, by removing the chloroform as thus recommended, the bad symptoms will speedily subside, and the assistant, having allowed a minute or two to elapse, may again administer it, still, of course, keeping his eye on the three sign-posts of danger. It will occasionally happen that the administration will require to be thus interrupted three or four times, but in all cases we shall ultimately triumph by inducing the condition of tolerance.

The apparatus employed by him is the simple one in ordinary use, viz., a fold of calico half a foot square, one end of which is "gathered," and a ligature fastened round it—within the hollow thus made a piece of sponge saturated with chloroform is placed. The assistant, holding the end enclosing the sponge in his left hand, places it over the patient's nose on a plane above the nostrils, whilst, with his right hand, he holds the free end as a veil over the lower portion of the face.

M. Chassaignac states that it was in the year 1850 he first conceived the idea of introducing the operation by "Écrasement Linéaire." Aided by M. Mathieu, the skilful surgical mechanist, he succeeded in giving practical effect to his idea by means of the instrument which has become familiar under the title of "Écraseur." I shall not occupy time by describing this instrument, as I have little doubt my readers are already well acquainted with it. I may state, however, that several attempts have been made to improve upon it: amongst the rest M. Charriére has produced one supposed by many to be preferable to M. Mathieu's. Such is not the opinion of M. Chassaignac himself, and in some experiments instituted by him, at which I had the advantage of being present, he clearly demonstrated the superiority of the original instrument.

In his Memoir[a] he advises all who purpose trying his form of operation, before using any of these écraseurs, to ascertain that the chain accurately fits the hollow leg of the handle

[a] Memoire sur l'Écrasement Linéaire. Paris: 1856.

through which it is to be pulled in the process of removing or dividing parts. Unless it be found to do so *most accurately*, instead of effecting a clean section of them, it will drag the last portion, probably integument, into the leg of the instrument, thereby most disagreeably complicating the operation, and necessitating recourse to the bistoury to accomplish the section of the retracted portion. Again he cautions us to test the power of the chain. This he does by placing within its loop some tough substance which it cannot crush. He then exerts all his strength in endeavouring to effect this, and by the manner in which it bears this severe strain he determines whether it be fit or not for use.

The écraseur is not applicable to the removal of tumours in which bone exists, or fibrous structure to any considerable amount. As the result of a series of experiments, he found that tendinous structures will be compressed, but not divided, by it, unless an amount of force be exercised which no instrument as yet manufactured for the purpose will bear.

The advantage which M. Chassaignac claims for his form of operation over all others in the removal of tumours is, that it combines to the safety from hemorrhage of the ordinary operation by ligature, the rapidity of the bistoury in its action of separating the parts. But few tumours will need a longer period than from ten to fifteen minutes to be removed, which, as he truly states, contrasts most favourably with the tedious action of the ligature, extending as it does over a space of from four to seven days.

On the other hand, the advantage it possesses over the knife, in being attended with little or no hemorrhage whilst dividing or removing vascular structures, is self-evident.

A remarkable proof of its efficacy in this respect is adduced in the account given in his Memoir of a series of experiments on arteries, in which he found that the coats of these vessels became so completely blended together in the process of section by the écraseur, that no exertion of the lungs, by blowing into the vessels behind their divided extremity, could force a passage for the air through them. Its power of removing vascular parts without hemorrhage will be influenced by two circumstances—

1st. The vascularity of the parts to be divided.

2nd. The time employed in the operation.

The latter should, of course, be regulated by the former. The rule acted upon by M. Chassaignac is to allow, in the case of ordinarily vascular tumours, an interval of fifteen seconds to elapse between each movement of tightening, in

other words, between each "clicking" sound of the instrument, which indicates, to use a nautical expression, so much "paying in" of the chain. When he is removing portions of the tongue, or other parts equally vascular, he allows a very much longer interval to elapse. It is of some importance that this should be well understood, as I have witnessed instances in which surgeons cutting through vascular structures, almost as rapidly as the instrument would permit them, wondered at seeing a severe hemorrhage resulting. The fifteen or twenty seconds' interval will make a vast difference in the result, rendering what—without this precaution, would be almost as sanguinary an affair as if the knife had been in requisition—generally a perfectly bloodless one.

M. Chassaignac has employed his écraseur in the removal of an immense variety of tumours. He has already given, in the Memoir I have before referred to, an account of a large number of them. I shall not attempt following him there, but shall content myself by referring to some few special forms of disease, for removing which it is in my judgment most suitable. I shall of course speak of none but those in which I have seen it repeatedly employed with the best results.

Tumours in the Anal Region.—It will be readily conceived, from the very vascular nature of the tumours met with in this region, especially hemorrhoidal, that this instrument would be particularly adapted to removing them, and such is the case. Indeed, so well has its character been established in this respect in the opinion of the Parisian public, that, during my attendance at his clinique, he was never without a retinue of applicants eager to be relieved through its means; and no wonder, for I cannot conceive greater triumphs of surgery than I have been a witness to its effecting in some cases of the more distressing forms of hemorrhoidal tumour.

These were cases of aggravated internal piles, characterized by their extent of growth; the excessive pain caused by them; constant hæmorrhage; and were attended with the usual concomitants of general as well as local irritability.

The treatment of such cases, familiar to the practice of most surgeons, I believe I am correct in saying is frequently attended with much difficulty and embarrassment. Should their removal be effected by ligature, as recommended by the English surgeons, a second or third application, according to Copeland, will be necessary before the entire mass can be extirpated. I need not particularize all the annoyances to both surgeon and patient, arising out of this tedious form of procedure. Its very painful nature, too, especially in those cases

complicated (and how few of them are not) with more or less inflammation and excessive tenderness, renders it so unpleasant as to have compelled Sir A. Cooper to give it up for a time in favour of the less painful though more dangerous operation of excision. Such cases prove equally unsuitable to the various other remedial means which have been devised. The actual cautery, the favourite remedy of the French surgeons, never can come into repute in this country. And Curling states that the application of nitric acid, as recommended by Houston, which he considers the most efficient method of treatment in the general run of hemorrhoidal cases, will yet be inefficient in those worst forms I am at present considering. I need scarcely speak of excision by knife or scissors, as I believe all surgeons at present agree in condeming it in such cases. Now it is precisely in such that the "écraseur," in my judgment, will be found a most valuable aid to the surgeon. Assuredly in several cases of the kind, in which I witnessed its employment, the effects were all that could be desired. The tumefied mass, as large in some of them as the closed hand, and growing from the entire circle of the rectum, was removed without any hemorrhage, without the patient being conscious of the removal—without, in fine, any single disagreeable complication either during or after the operation.

A very important feature also in favour of the 'écraseur' in these cases is, that it can with safety be employed, although the tumour and parts surrounding it be more or less inflamed. On this point I am induced to quote from M. Chassaignac himself. In the Appendix to his Memoir, p. 471, after recounting the history of a remarkable case of this kind in which he operated, he states: "Notwithstanding a subacute inflammatory condition of the tumour, with even some gangrenous points on its surface, I did not fear to operate immediately after the patient's admission into hospital, so urgent did it seem to me to get rid of the hemorrhoidal affection. It is not the first time I have thus operated in the midst of an inflammatory condition of the tumour. I have always done so with success." And he goes on to say, "if we recall to mind the numerous instances in which the tonsils are removed in a similarly inflamed state, we may well doubt the universal application of the therapeutic rule, in virtue of which we should await the disappearance of the inflammatory state before undertaking the removal of diseased parts."

Before employing the écraseur in the removal of hemorrhoids, M. Chassaignac impresses the necessity of having the patient completely under the influence of chloroform. Indeed

he admits that without this the successful performance of the operation would be impossible. No human being, however courageous, could endure the pain attending it without more or less writhing and contortion, which would be fatal to the success of the operation.

Having accomplished this essential preliminary, he proceeds in the following manner:—Gently turning the patient upon his left side, and flexing the right leg upon the thigh, and the thigh on the pelvis, he brings the parts fully within his command. He first passes into the rectum his "Érigne," having the hooks sheathed, introducing it sufficiently deep to be certain of grappling the entire tumour, he unsheathes it and draws it forcibly out, of course carrying with it the hemorrhoidal mass. He then includes the entire within a firm twine ligature, and round the track of this latter he places the chain of the écraseur, which he proceeds to shorten until it constricts the tumour. At this period he desires an assistant to note the time, and to make a sign to him as every fifteen seconds elapse —on every such sign he tightens the chain until the click is heard. As a general rule, the tumour will be separated in a space of time varying from ten to twenty minutes, leaving an almost bloodless surface, on which the track of the wound will be scarcely discernible. The after-treatment consists in graduated pressure retained firmly against the anal opening by means of the usual perineal bandage; the patient is removed quietly to bed. Of course precautions are taken before operating to have the bowels cleared, and in such a condition that a motion will not take place for seventy-two hours after. M. Chassaignac considers it of much importance to secure this, and with that view gives strict injunctions respecting the patient's dietary, confining him to food of the simplest kind, and especially interdicting vegetables, or anything calculated to generate intestinal gases, &c.

In one of his earlier operations he found, from not having adopted proper precautions, that the wounded surfaces of the intestine became partially adherent in the process of healing, thereby most disagreeably complicating the operation by a partial stricture of the rectum. This accident he now always prevents by the following method, which I quote from the Appendix to his Memoir:—

"On the day following the operation I introduce a catheter into the intestine with much gentleness. I renew this manœuvre the two following days, after which I daily introduce an elastic bougie, each of larger caliber than the preceding one, taking care to have them well greased before introducing them."

The wound will heal by granulation, and M. Chassaignac affirms, and certainly, as far as I could judge, with perfect truth, that the amount of suppurative inflammation will be comparatively very slight. In favourable cases it will be healed in a fortnight.

Rectal, Uterine, and Nasal Polypi.—The employment of the écraseur in these forms of tumour needs no remarks from me, as it is evident how admirably it is adapted to the operation of removing them. I shall, therefore, simply state that in numerous cases of one or other of them, in which I saw it used, the result was everything which the surgeon could desire.

Anal Fistula.—Next to the class of hemorrhoidal tumours, I should be inclined to place this affection as "fit and proper" for this instrument. In the operation for fistula it in truth fulfils every indication that could be wished. In all the cases in which I saw M. Chassaignac use it, the section of the parts was effected without any hemorrhage whatever, and the wound inflicted by it was precisely of that description most desirable in these cases; the amount of contusion of the parts necessarily caused preventing the possibility of the wound healing in any other way than from the bottom; and the comparatively small amount of suppuration, which M. Chassaignac claims as one of the results most characteristic of the action of the écraseur, will be found of no slight importance in the cases of debilitated and broken-down patients ordinarily afflicted with this complaint.

I remarked him operating with it in one or two cases of this disease in which he seemed to think it very questionable if any other form of operation would have been available for the patients' relief. They were cases in which, combined with general debility and marasmus, there was an exaggerated amount of local disease. The anal region was permeated, in various directions, with fistulous sinuses, and the constitution of the patient, where it had not developed organic disease, was yet so broken as to be unable to make a vigorous effort to set up healthy action. In these cases he stated that the ordinary operation, by bistoury, would be hardly available. The low state of vitality of the parts; the extent of the wounds required in laying open the sinuses; the amount of hemorrhage that would result; finally, the severe suppuration, would all speak trumpet-tongued in favour of the écraseur.

In employing it in such cases, a somewhat different mode of proceeding is required than for removing tumours. In M. Chassaignac's words:—"The *Écrasement Linéaire*, applied to fistula in ano, comprehends two operations,—the one prepara-

tory, the other definitive. The one has for its object to establish a conductor for the chain of the instrument round the part to be divided, the other is the act of division."

He first passes a very flexible bougie through the fistulous canal, and, by means of his forefinger introduced within the rectum, conveys it out through the anus. If the sinus be large enough to permit the chain to follow the bougie, he attaches it at once to the end of the latter, and is thus enabled to finish the operation at the one sitting. Generally, however, it will be necessary to expand the fistula somewhat before the chain can be got through, and this he accomplishes by passing, at the first sitting, a piece of flexible gum-elastic tubing—such as he employs in his novel method of "surgical drainage"—through it. He leaves it there for a day or two, and always finds that it has the effect of expanding the sinus sufficiently to enable the chain to be passed. From my observation of its effects in a number of cases in which I was fortunate enough to witness its employment, I can most fully endorse the following remarks, with which M. Chassaignac concludes the section of his Memoir treating of this affection:—

"By the écraseur we can cure fistula in ano with more certainty, and much less danger, than by any other means yet devised.

"A complete absence of the usual accidents, the excellent nature of the wound, the simplicity of the ulterior treatment, the very slight amount of suppuration, and the more rapid cicatrization than results from the use of a sharp instrument,—such are the advantages of the écraseur in this disease."

Congenital Phymosis.—In no cases will the peculiar advantages of this instrument, as an "anti-hemorrhagic," be rendered more striking than in those of circumcision. I have seen it used in many such, and can most fully bear out M. Chassaignac where he terms it an absolutely bloodless operation. Notwithstanding, however, this very desirable feature of its action in these cases, I imagine it will not be likely to supersede the scientific operation of M. Ricord. Were we to form a judgment of the two methods by the results attending their immediate performance, everything would be in favour of the écraseur: bloodless, in the most absolute sense of the word, and comparatively painless, the removal of the prepuce by the écraseur would seem to be the triumph of surgery; in this respect, no doubt, contrasting most strikingly with the bistoury, the operation with which is both exquisitely painful and sufficiently bloody. It is, however, when both wounds

are in the process of healing that M. Ricord's operation will be found to be the real "triumph." This is at once evident from the fact, that in the one case no provision can be made for the accurate adaptation of the edges of the wound to each other, a point of the greatest importance to the ultimate comfort of the patient, and for which provision is made, with almost mathematical precision, by M. Ricord.

It is but right, however, to say, that M. Chassaignac does not apprehend any ultimate inconvenience to the patient from his operation; and certainly, up to the period of their leaving hospital, there was no evidence of any disagreeable result in those cases in which I saw him use it. His *modus operandi* consists in introducing within the contracted orifice of the prepuce his "Érigne," sheathed. On pushing it fairly in, he unsheathes it, and, drawing it towards him, he effectually draws with it the whole circle of the prepuce entangled in its hooks; he then fixes on the chain of the écraseur in the usual manner, having previously isolated the portion to be removed by a ligature. The after-treatment consists in simply dusting the parts frequently with flour, and applying, in the process of healing, a solution of nitrate of silver to the wounded surface daily.

Operations on the Scrotum and Testicle.—M. Chassaignac claims a very high character for the écraseur in the operation for the radical cure of varicocele. I should imagine, however, that most surgeons would dread the effect of so extensive a wound as he inflicts in those cases. I witnessed two operations of the kind, and certainly felt no slight alarm for the patient's safety when I saw the huge gap left in the scrotum on the removal of the instrument, carrying with it, in each case, a slice of over an inch in length, by half an inch in width, of the varicose vessels, with the surrounding tissues and integument. In both cases, however, fortunately for the patients, M. Chassaignac's prediction as to the benignity of the wound proved correct: they healed rapidly by granulation, and the radical cure of the disease seemed certainly complete. The operation consists in first carefully isolating the varicose mass from the cord and spermatic vessels, which latter he keeps with his left hand securely out of the reach of his operative manœuvres; then passing three spear-pointed pins, as in M. Vidal's operation, he encircles the mass included within the three by a ligature, over which he passes the chain of the écraseur, and removes the whole in the usual manner. He directs the pins to be passed through at somewhat less than a

finger's-breadth from one another, taking care that the lowest of them will pass through on a plane above the vaginal sac.

He always endeavours, by bringing the lips of the wound together, and retaining them by interrupted sutures, to procure adhesion by the first intention; and states that he succeeded in accomplishing this in a case the particulars of which he laid before the Academy of Medicine[a]. Generally, however, owing to the contused nature of the wound, this attempt will not succeed.

He tells us in his Memoir that he has repeatedly removed the entire testicle with perfect success. As I had not an opportunity of seeing him use it in a case of the kind, I can but refer to the interesting examples reported by him.

Operations on the Tongue.—I regret that my opportunities of witnessing its effects, in the removal of the whole or part of the tongue, were not sufficient to qualify me to form a judgment on the disputed question, as to whether it affords the surgeon in these cases a complete safeguard against hemorrhage. I saw but one case of partial amputation of this organ effected by the écraseur, and must confess that in it the results were not such as to make me enthusiastic in its favour, the most that could be said for it being, that the application of a ligature was not needed; the hemorrhage, however, was very obstinate, and was only checked, after some hours, by repeated applications of ice.

The case was not, however, one from which it would be fair to condemn the instrument, inasmuch as M. Chassaignac admitted he had effected the section in a very much shorter time than was usual with him. He added, that in the previous operations he had performed on this organ, he allowed a couple of hours to elapse (on this occasion he only allowed a few minutes) between each motion of tightening the chain, so that the section was only completed the day following that upon which the constriction had been commenced; and he stated that in these cases there was no hemorrhage worth naming. If we are to give credit to the remark with which, on reference to my notes, I find he concluded his comments on this case, to the effect that in no one of the numerous partial and complete amputations of the tongue which he had performed with the écraseur, had he occasion to apply a single ligature to a bleeding vessel, we are forced to the conclusion that the advantages possessed by it over the ordinary ligature, in effecting the sec-

[a] Bulletin de l'Académie de Médecine, tom. xx. p. 561.

tion in one day instead of seven or eight, renders it the most efficient instrument as yet devised for these cases.

I cannot, perhaps, better conclude my remarks on this "novelty" of M. Chassaignac's than by quoting, from the Appendix to his Memoir, a *resumè* of its results in eighty-four cases operated on by him.

1st. The inflammation which follows operations by the écraseur is much less than that observed after operations by the bistoury.

2nd. Suppuration is diminished to an enormous degree; so much so that, after the operation for fistula, or the removal of hemorrhoids, there is no need for dressing after the first two or three days. A little flour dredged on the wound will be enough.

3rd. The slight traumatic inflammation and little suppuration explain the rapid cicatrization which follows the écraseur.

4th. One of its most remarkable properties is that of being unattended with purulent infiltrations in the neighbouring parts, which so frequently follow operations with the knife.

5th. The pain attending and following it is much less than that following the bistoury.

6th. All hemorrhage, whether primary or secondary, is prevented in a certain manner.

7th. Not a single instance of nervous delirium, or of tetanus, has followed its employment.

8th. If it does not wholly prevent purulent absorption, it certainly diminishes the chances of this accident exceedingly, since, out of the eighty-four cases observed, on one occasion only was there any evidence of it having occurred, and this was in the midst of exceptional circumstances, which deprived the operation of its most essential qualities.

9th. Complete absence of the occasional accidents of ordinary wounds, such as erysipelas, hospital gangrene, inflammation of absorbents, abscesses, &c.

Art. VIII.—*An Inquiry into the Nature and Pathology of Tetanus; with a view to decide the question as to the propriety of Amputation or other Surgical Operations in Traumatic Cases. And Remarks on the Peculiar Action of Chloroform, Nicotine, and the Wourali Poison*[a]. By S. Henry Hobart, A. B., M. B T.C.D., &c., Medical Officer, Cork Dispensary.

Long as tetanus has been under the consideration of medical men, it must still be admitted to be a decided "opprobrium medicorum;" few diseases being more universally fatal, or less amenable to treatment. Hippocrates, Plato, Galen, Aretæus, &c., have all written on the disease, and shown a very intimate acquaintance with the subject. The latter writer speaks of the three varieties,—emprosthotonos, opisthotonos, and tetanus; he, also following Hippocrates, distinguishes between tetanus from a wound and that coming on from cold, &c., and fully recognises the greater severity of the traumatic cases, for he says that, "spasm from a wound is fatal;" and in another place: —"But if spasm be connected with a wound, it is dangerous, and little is to be hoped." With regard to difference of age, he says, "children are frequently affected, but do not often die." Under the head of treatment he recommends general bloodletting in moderation, but judiciously advises gentleness in the operation, for fear of exciting spasm; at the same time he administers soft, nutritious food to support the strength; he applies cupping instruments to the occiput and to each side of the spine; assafœtida and castor, on account of their antispasmodic properties, he also extensively employs. Paulus Ægineta speaks of almost the same treatment as Aretæus; he approves of cupping with scarifications, but considers dry cupping injurious. Celsus is doubtful of the propriety of venesection, forbids the early use of wine, and approves of cathartics. All the ancient authors have a high opinion of emollient applications, such as bladders containing warm oil being applied to the parts most affected; also a bath of warm oil (which appears to have been a rather expensive remedy) and enemata were in common use.

Now, when we compare this, the state of the subject over a thousand years ago, with our knowledge of it at the present day, we are constrained to admit that little has since been done beyond confirming the propriety of the treatment of the ancients, and showing that they sometimes did, as if by accident,

[a] Read before the Cork Medical and Surgical Society.

what has since appeared to be indicated by pathology; thus, the propriety of Aretæus' plan of cupping the occiput, &c., is supported by the fact of congestion being so often found in the membranes of the medulla oblongata, &c. And indeed, with the exception of Larrey's suggestion, to amputate the injured limb in traumatic tetanus, very little novelty has since been introduced. It is to this course of treatment, which, after a short career, has now almost fallen into disuse, that I desire to call the attention of the profession, as, notwithstanding the prevalent opinion of the day, which too often influences individual conviction, I feel by no means satisfied that a sufficient trial has been given to the practice to warrant our condemning it, if indeed its utility has not been already fully proved. An almost universal cry has been raised against amputation, because several cases so treated have terminated fatally, and in some the disease has been aggravated, and the fatal result materially hastened; but will this justify our condemning a practice in other instances attended with the best effect? As well might a surgeon condemn the operation for strangulated hernia on the plea that it is not always a successful one, and that death is sometimes hastened by the shock of the operation. In the above remarks I wish to be understood as contending for the utility of amputation, merely as *one of the means* of severing the communication between the injured part and the sensorium; and in the following observations I shall refer to cases illustrative of the advantage to be derived from the various plans that may be adopted for attaining the same object. Dr. Copland (who, in his "Dictionary of Medicine," gives the most able article on tetanus that I have seen) is of opinion that the disease may be produced in different ways:—

First, that irritation at the peripheral extremity of the nervous sphere may be propagated by sentient nerves to the nervous centre, and be reflected thence on muscular parts by motor nerves.

Secondly, that in certain cases, as in the idiopathic variety, inflammation or congestion of the medulla oblongata, or medulla spinalis, or their membranes, occurs, and that the tetanic symptoms are in those cases the manifestation of the early stage of this inflammatory change.

And thirdly, that when tetanic spasms are produced in the first manner, viz., by irritation transmitted and reflected, the inordinate contraction of the muscles causes an increased demand upon the circulation supplying the nervous centres which actuate these muscles; and that this increased vascularity quickly leads to congestion or inflammation.

In reference to the first of these theories it is right to mention that it, or at least an identical one, in connexion with chorea, convulsions, &c., was put forward by Dr. Copland two years before the first writings of Dr. Marshall Hall on reflex action appeared; and the latter author has since ably contended that all convulsive diseases are caused by reflex action. Though reflex action, excited by local irritation, may appear at first sight scarcely adequate to produce all the symptoms of tetanus, the following facts will go far to prove that it is, in some instances at least, the only apparent cause. Let us take, for example, the well-known case related by Professor Robinson, of the negro who scratched his thumb with a bit of broken china, and actually died of tetanus in a quarter of an hour afterwards; or one which Dr. De Ricci so well describes[a], in which the symptoms of tetanus were well marked in four hours after the receipt of the injury; in either of these cases it appears almost incredible that inflammation could have been set up, or that any pathological change could have occurred in the nervous centres in the short time that elapsed between the occurrence of the accident and the appearance of the symptoms; and without some such change there is no way in which we can explain the production of tetanus but by this system of reflex action.

Again, it is universally admitted that convulsions in children are commonly caused by the irritation of teething, or of worms in the intestinal canal. This is evidently the result of reflex action; on which account it is that these alarming symptoms are so often immediately cured by the removal of the cause of irritation. If, then, convulsions can be caused by reflex irritation, why should not tetanus—a disease so very analogous—be produced in a similar manner? And if it be admitted that this cause is capable of producing the disease, no man can dispute the advisability of amputating in the early stage of traumatic cases, or of otherwise removing the source of irritation, so long as there is reason to hope that no other lesion exists: moreover, cases of recovery from tetanus, where amputation had been performed for the arrest of the disease, have been related by Larrey, Valentin, White, Howship, and others. Dr. Curling states that it was resorted to in eleven of the cases in the Table which he gives, and of these, seven were cured.

Though the cases related by Baron Larrey have been over and over again referred to by various writers, they appear so

[a] Dublin Quarterly Journal, August, 1850.

important, as bearing on the subject, that I make no apology for the following short allusion to some of them. I quote from Cooper's "Surgical Dictionary." It would appear from the following extract that his attention was first directed to the subject more by accident than by preconceived opinion:—"The equally *unexpected and entire success*," observes Larrey, "obtained by the amputation of the injured limb, in the person of an officer attacked with chronic tetanus, leads me to propose the question,—Whether, in this disorder occasioned by a wound, it would not be better to amputate the injured limb immediately the symptoms commence, rather than expect from the resources of nature, and from very uncertain remedies, a cure which so seldom happens"[a]? &c. In another case he repeated the experiment "where acute tetanus had set in: the symptoms were stopped, as if by enchantment; the patient passed twelve hours in perfect ease, but, being exposed to damp, cold air, the disorder returned and carried him off"[b]. He likewise adduces an interesting example, in which speedy relief and a cure followed the cutting off of all communication between the nerves of the wounded part and the sensorium, by a suitable incision. He has also recorded some convincing proofs of the benefit sometimes arising from the division of the trunk of the injured nerve. In one instance tetanic symptoms followed an injury of the supra-orbital nerve, but were immediately stopped by division of some fibres of the occipito-frontalis and the nerves and vessels down to the bone. In another he suspected the disorder to proceed from a principal branch of the crural nerve being tied together with the femoral artery, and he cut the ligature. The relief was only partial and temporary; the cautery was therefore applied deeply to the whole surface of the stump, a marked amelioration took place a few hours after, and the patient recovered.

A very interesting case is related by Dr. De Ricci, in the paper from which I have already quoted, in which amputation was had recourse to by Mr. B. Cooper, in Guy's Hospital. The operation was performed at 4 o'clock, P. M., and next morning the man was perfectly free from any appearance of tetanus, though the symptoms had set in with considerable severity, had increased rapidly up to the time of operation, and gave every indication of running a rapid course. Dr. Murray describes the case of a midshipman who trod on a rusty nail, which penetrated the left foot; he had to keep watch on deck after the accident, and was exposed to wet and cold in the

[a] Mémoires de Chirurgie Militaire, t. i. p. 262. [b] Ibid., p. 263-69.

night air. This occurred at 9 in the evening; at 8 next morning tetanus had set in. Other means having failed, Dr. Murray cut down on the posterior tibial nerve, and divided it. Though the patient was unable to articulate before the operation, he immediately opened his mouth with an exclamation, and expressed himself already much relieved; and although the symptoms returned afterwards in a mitigated form, he completely recovered in the end[a]. Mr. Samuel Cooper states, that the practice of nearly surrounding the wound by a deep incision has been had recourse to in University College Hospital, "and that most of the cases have been in favour of the plan"[b]. Dr. E. Phillips relates a case of severe tetanus, of several days' standing, from gastric irritation. After a variety of other means had failed, the patient was given a turpentine enema; in five minutes a copious stool was discharged, and the tetanic symptoms were quite relieved; next morning an intestinal worm was expelled, and the patient quickly recovered[c]. Dr. Mitchell mentions a case of tetanic spasm of the tongue and muscles of the face, caused by extraction of some carious teeth; and he alludes to a similar instance which occurred under the care of Dr. Thompson[d].

The above facts are, I conceive, amply sufficient to show that tetanus is in several cases—at least in the early stage—entirely dependent on local irritation, transmitted along the nerves to the sensorium, and that the removal of the local irritation, or the prevention of its being transmitted to the sensorium, is in some instances capable of putting a stop to the disease, and in others of greatly mitigating the symptoms.

But, on the other hand, it has frequently happened that amputation has been resorted to, or the source of irritation otherwise removed, and the disease has not been cured; on the contrary, the symptoms have been occasionally aggravated. In those cases there must evidently have been some pathological condition established capable of keeping up the disease after the local irritation had been removed; and this is exactly what we might expect if we adopt the theory to which I have already alluded, as suggested by Dr. Copland, that when the tetanic convulsions have lasted for some time (as the result of reflected irritation), congestion or inflammation of the medulla oblongata, or of its membranes, sets in; and that this state, when produced, is adequate of itself to keep up the symptoms

[a] Dublin Journal of Medical Science, vol. v.
[b] Surgical Dictionary, p. 1232.
[c] Medico-Chirurgical Transactions, vol. vi. p. 65.
[d] Library of Medicine, vol. ii. p. 241.

of tetanus. Now, in order to render this theory convincing, it is necessary to consider the following points:—

1st. Is inflammation or congestion of those parts capable in itself of giving rise to tetanus?

2ndly. Is the condition likely to arise either as the result of violent muscular action, or of the transmission of irritation to the nervous centre? And—

3rdly. Have we sufficient reason to believe that it does arise in the course of the disease?

It is scarcely necessary to consider the first question at all, every writer on spinal meningitis speaking of the occurrence of symptoms which at least very strongly resemble tetanus. Dr. Bennett, in describing the symptoms, says[a]:—"As the disease advances there are convulsive contractions of the neck and posterior part of the trunk; sometimes there is complete opisthotonos." Again:—"In other instances there is trismus." Again:—"When the tetanic spasms are intermittent," &c. In comparing cerebral meningitis of the base of the brain with that affecting the upper surface, the same writer says:—"There is a greater prevalence of spasm, tonic and clonic. These pathological features are ascribed to the disease being seated in the immediate neighbourhood of the medulla oblongata and cerebral centres in general. . . . While a higher degree of vascular turgescence, by irritating the excito-motor nerves, induces spasms"[b].

"Among the commonest symptoms of inflammation of the meninges of the cord," Dr. Watson mentions "rigidity or tetanic contractions, and sometimes violent spasms of the muscles of the back and neck, amounting, in some instances, to perfect opisthotonos."

Though tetanic symptoms are here attributed to the spinal meningitis, it may be fairly questioned whether those symptoms are the result of the meningitis at all, or whether they may not be caused by some peculiar condition of the medulla oblongata itself, commonly accompanied by congestion of the membranes; but as the meningitis is an obvious lesion, while the peculiar condition of the medulla (if such exist) has never been demonstrated, it appears allowable to attribute the symptoms to the former, though the difficulty of understanding how any affection of the membranes could cause spasm (while a like affection of the cord itself has not that effect) may lead us to suspect the existence of some intermediate cause. Of course this question applies equally to all cases of idiopathic, or such

[a] Library of Medicine, vol. ii. p. 189. [b] Ibid., p. 34.

cases of traumatic tetanus as are supposed to depend on congestion or inflammation of the spinal meninges.

With regard to the second question, whether congestion or inflammation of those parts is likely to arise in the course of tetanus depending on reflex irritation,—I have already alluded to the opinion of Dr. Copland, but upon this point I may be permitted to quote his own words:—"That in cases which arise from irritation in some distant part, transmitted to the nervous centres, and reflected thence upon contractile structures, and in which inflammatory action is either absent, or its existence is problematical, at an early period of the malady at least, we cannot infer, agreeably with what we know to take place in the animal economy, that inordinate or continued contraction of muscles can exist without an increased demand being made upon the circulation supplying the nervous centres which actuate these muscles, and hence we may conclude that increased vascularity, or even the earlier stages of inflammation of these centres and of these membranes, may be the *necessary consequence* of the continued and inordinate muscular action constituting the disease." Nor can there be the least question of the fact, that increased duty being required of any organ is necessarily attended with increased vascularity; neither does it appear inconsistent with analogy that the same cause may lead to decided congestion, or even inflammation.

Again, it may be asked,—May not the irritation, transmitted to the centre from the injured parts, be capable in itself of exciting inflammation, just as a particle of dust irritating the conjunctiva will produce a like condition of that membrane? And further:—May not the irritation thus applied lead (in some cases) to this lesion of the spinal meninges, without producing any muscular contraction as the result of reflex action, but this condition, when established, cause the first symptoms of tetanus; for how can we otherwise account for the fact that tetanus occasionally makes its first appearance after the wound itself has completely healed[a]? That this, however, is not always the course of the disease, has been already proved.

The third question is as easily answered as the first, it being universally admitted that at least congestion, if not inflammation of the medulla oblongata, and of its membranes, is by far the most common pathological condition found in fatal cases, being present in the majority of instances, particularly if examined sufficiently soon after death.

From the above facts I have no hesitation in coming to the

[a] Library of Medicine, p. 236.

conclusion that our first duty, on being called to deal with a case of traumatic tetanus, is to consider by what means we can best remove the source of irritation. Should it be caused by a bad injury, such as would of itself materially endanger the limb, independently of the complication with tetanus, let amputation be at once resorted to; but should the injury be of a less serious nature, and be so situated that the nerves leading from the part can be readily divided, then by all means let the preference be given to this milder course; but, notwithstanding the success attending this plan of treatment in Dr. Murray's case, and the high opinions entertained of it by some writers[a], yet it must be admitted that, though a milder operation, it is applicable to comparatively few cases: we can but seldom be sure of what nerve, or how many of them, may be in error; nor, even should this be decided, would it be always possible to divide those that we should wish, without the risk of leaving a paralyzed and useless limb, or of wounding some other important part. In other cases the wound may be very trifling, one affecting merely the skin, in which case no demonstrable nerve may be ascertained to be injured. Under such circumstances we may resort to the expedient referred to by Mr. Cooper as being so successful in University College Hospital, and also spoken favourably of by others, namely, almost surround the parts with deep incisions, or, what would appear still more satisfactory, excise the injured parts altogether, and bring the edges of the new wound together. And, indeed, should this operation not prove almost immediately successful, we ought then to consider what nerve supplies this portion of integument, and at what part of its course can it be easily and safely divided. I would venture still to hope that this secondary operation might be attended with benefit, even after the excision of the injured part had failed, on the supposition that inflammation may have extended up the nerve for a short distance; and that this may, in some instances, be capable of keeping up the disease, on the same principle of reflex action, while yet the medulla oblongata had not suffered any injury; and the fact that the nerves of the affected limb have been often found in an inflamed condition shows the possibility of this theory.

The success of any of the above means must, of course, mainly depend on the promptitude with which it is under-

[a] Dr. Bennet says: "It is a singular fact that this practice, which our knowledge of pathology and physiology shows to be necessary, and likely to be successful, has only, as far as medical records go, been performed four or five times, but in all these with perfect success."—*Library of Medicine*, vol. ii. p. 242.

taken: if done in the very early stage, we may fairly hope that the disease will be thereby quickly arrested, but this can occur only in case the local irritation is still the sole cause. But suppose the secondary cause has already commenced in the medulla oblongata, may we not expect that some advantage may still be derived from the same treatment? If irritation "transmitted to the nervous centre," &c., be in the first instance capable of producing the disease, it must, after another cause for the same is established, be still calculated to produce the same result. And thus, there being two causes in operation, the effect must be doubled, but when the primary cause is removed we have then but one condition to treat, namely, that of the nervous centre, which we may hope to cure by appropriate treatment, without the danger of its again returning, whereas, had we even succeeded in curing it while the primary cause remained, it would, in all probability, be again renewed by the same means by which it was first excited.

Several cases of tetanus have, from time to time, been related, in which surgical means have been used to cut off the source of irritation, with the effect of producing complete relief from the symptoms for some hours; but, after an interval of apparent health, the disease has again returned, and though in some instances in a mild form, has occasionally proved fatal. The most rational explanation of this appears to be, that, previous to the removal of the injured part, inflammation (or whatever the peculiar condition of the nervous centre may be) had just commenced, and that, though its exciting cause was removed, it still continued to advance, until it reached that state at which it was capable of producing tetanic symptoms. Again, in some of the cases above alluded to, the relief of the symptoms does not appear to have immediately followed the performance of the operation, but to have occurred in some time afterwards; in that, for instance, where Larrey suspected the nerve to have been included in the ligature with the femoral artery, and when, after the failure of other means, he applied the actual cautery, the improvement is said to have taken place a few hours after the operation; and in that reported by Dr. De Ricci, as operated on by Mr. Cooper, it is said that next morning the man was free from tetanic symptoms, showing that the relief did not occur at once, but probably at some period during the night. Were either of those cases to occur under the observation of a man prejudiced against operative interference, while, at the same time, some favourite form of treatment was put in practice, it is not improbable that the recovery would be attributed to

the latter, because it was not the *immediate* effect of the former. But are we justified by analogy in expecting that the removal of the local irritation should always be immediately followed by the cessation of the spasms, even when undoubtedly caused by that irritation? By no means; for we frequently meet with cases of convulsions in children, resulting from the presence of intestinal worms, where, after the expulsion of the worms, the convulsions still continue for some time, and finally subside without the administration of any further remedy, or the expulsion of more worms; as if such a state of excitation became established in the nervous system that it required time to regain its natural condition. Indeed, I have little doubt that the result of many of the cases of tetanus that have from time to time recovered has been (in part, at least) due to the fact of the local irritation having ceased to act, either from the wound having taken on a healthy action, or from the sloughing of the part; but that the connexion between this change and the first amelioration of the symptoms not being sufficiently striking, the cure was attributed to the treatment adopted. Thus there are three cases referred to in Sir James Mac Grigor's Report on the Diseases of the Army, where venesection was fairly tried, and the only one in which recovery took place was one where hospital gangrene attacked the injured hand[a].

Here the recovery might be attributed to the treatment by blood-letting; but it appears much more rational to suppose that the sloughing of the part removed the local irritation; in fact, it amounted to exactly the same thing as amputation of the portion of the limb that sloughed.

I have already referred to the fact, that some cases of tetanus have been met with, in which the disease has been aggravated by surgical interference; in some instances the muscles, on being cut through, have been rigidly retracted, so that it has been impossible to keep the soft parts in contact, though the bone had been very freely cut away, while the patient's sufferings can be better conceived than described; this is caused by the greatly increased sensibility of the excito-motor system, so often observed in tetanus, the least cold draught frequently leading to violent convulsions; and when, under these circumstances, so very painful an operation as amputation is resorted to, it appears no way strange that the effect would be thus severely felt; but with such an agent as chloroform at our command, capable of arresting this morbid

[a] Medico-Chirurgical Transactions, vol. vi. p. 455.

sensibility, we need no longer fear this ill consequence; and thus the principal objection which has been urged against operation is at once removed.

With regard, however, to the more extensive use of chloroform, as also of nicotine, the wourali poison, and similar medicinal agents, I would be very cautious of pronouncing any of them deserving of the name of a cure for tetanus. They will arrest the spasms, and thus relieve from much suffering, and if the system be brought early and fully under the influence of any one of them, and its effect be kept up unremittingly, until the source of irritation is removed, it may possibly prevent the development of the secondary lesion in the nervous centre. But should this condition of the nervous centre (or the secondary cause, as I have termed it) have already set in, it is quite evident that no remedy of this class can have any effect in curing it. But though such agents can remove neither the primary nor the secondary cause of tetanus, the fact of their allaying suffering, and the hope that they may prevent the development of the secondary cause (though they cannot cure it) renders them well worthy of our close attention. Let us inquire, therefore, which of those agents is the best suited to our purpose, which will act most directly on the disease, and which has the least ill effect on the system generally? The object in all cases is to produce paralysis of the voluntary muscles; this is accompanied, where chloroform is used, by a complete loss of consciousness, preventing the patient from describing his own feelings, a most important guide as the case advances; he is also unable to call for food, or to take it if offered to him, unless he be allowed to recover, in some measure, from the effect of the anæsthetic, and then, as soon as consciousness begins to return, the muscular contractions reappear in equal proportions. There is another objection which I conceive exists against the use of chloroform in cases of tetanus, namely, that of causing congestion of, and even effusion into, the bronchial tubes, upon which points I have made some remarks in describing a case of tetanus, in another part of this Journal[a]. Nicotine, on the other hand, seems to be capable of producing the desired effect without interfering with the mental faculties; in fact, it brings the system into a state almost the direct reverse of tetanus. It appears also from recent experiments that it is likely to prove useful as an antidote against strychnia. Professor Haughton has lately read before the Irish Academy an account

[a] See Proceedings of the Cork Medical and Surgical Society, in Part iii.

of some experiments performed by him, on this question, with the following results:—Frogs placed in a solution of nicotine were quickly paralyzed, and died in a state of complete relaxation; others, placed in a solution of strychnia, died of convulsions; but when others were placed in a combined solution of the two agents, though this was amply strong to cause death by either, it only caused slight convulsions, and that after a long immersion, and the frogs, on being removed from the bath, soon recovered; and had it contained a little more nicotine, there is little doubt but that the effect of the strychnia would have been completely neutralized. Now, as the symptoms of tetanus and those of poisoning with strychnia are almost identical, it may fairly be expected that nicotine would be equally useful in the one as in the other. Still, there is one strong objection to the use of this medicine in such cases, namely, its extremely depressing effects on the circulation.

Now, tetanus itself so debilitates the system, that quina, wine, and broth, are of late among the most favourite remedies; and when we attempt to cure such a disease with, perhaps, the most debilitating agent in the Materia Medica, the risk must be obvious. It therefore remains to inquire, are the same objections applicable to the use of the wourali poison, or is it capable of paralyzing the voluntary muscles without interfering with the action of the heart? On this point I would refer to an experiment by Dr. Pavy, of Guy's Hospital, the principal features of which were as follows:—A pup, four or five months old, had a small quantity of the poison introduced under the skin of the back: the animal soon became weak, and shortly was quite unable to stir; the limbs and the body became perfectly flaccid, and at last all appearance of life ceased. Meanwhile, a tube had been introduced into the trachea, and as soon as the animal was unable to breathe naturally, artificial respiration was established, and the heart's action, which had previously become very feeble, was quickly restored, and it continued to act firmly and regularly so long as artificial respiration was continued, showing that wourali kills by paralyzing the voluntary muscles, and, among others, those of respiration; death therefore resulting from asphyxia, while the heart's action is not at all affected, except as the result of impeded respiration. By another experiment he found that, under the influence of strychnia, also death by asphyxia was the result; but in this case the thorax was fully inflated and rigidly fixed, while with the wourali it was collapsed and flaccid. This rigid condition of the chest was found to render artificial respiration very difficult; but on raising the sternum,

and allowing the pressure of the air to act on the lungs and assist in expiration, it was easily established, and, as in the former experiment, the heart, which had almost ceased to act, quickly recovered in the same manner[a]. The opposite and counteracting effects of strychnia and wourali have been more fully illustrated by Dr. George Harley[b], viz.:—"1st. A frog was poisoned with 1–500th of a grain of wourali. Three minutes after he had become perfectly insensible, 1–120th of a grain of strychnia was injected: in five minutes he became tetanic. 2nd. A frog was poisoned with 1–120th of a grain of strychnia: three minutes after, tetanus was strongly marked. He was punctured with 1–500th of a grain of wourali: in seven minutes tetanus disappeared. 3rd. 1–500th of a grain of wourali, and 1–40th of a grain of strychnia, were injected into the abdomen of a frog: in five minutes it became very tetanic, in twenty minutes more it was perfectly flaccid, and next day was perfectly well." These experiments again would encourage us, from the analogy already alluded to, to hope that wourali might have a like influence on tetanic spasms.

There is another question, however, which arises in considering the value of each of those agents, namely,—By what means do they occasion paralysis? Is it by their action on the nervous system, or by some influence over the muscles themselves, independently of all nervous supply? That chloroform and nicotine act on the nervous system there can be no doubt, but the *modus operandi* of wourali is much less known, as being a rarer and more novel agent. Dr. Pavy states that it acts on the nervous system; for that, if any of the nerves be irritated, or an electric current be passed along them, no muscular action is produced, but that if a current be passed through the muscles themselves, they immediately contract. He does not appear, however, to have proved this himself by any particular experiment, but only states it as a fact. I have good reason to know, however, that by a series of experiments lately conducted in Paris, and which will be shortly published, it has been proved that on this point Dr. Pavy is in error, as I have been informed by an eye-witness, that in the experiments alluded to, electricity, passed through the muscles of an animal under the influence of wourali, did not cause the slightest contraction; but that when the muscles of an animal paralyzed with nicotine were electrified in the same way, they contracted freely. In either cases irritation of the nerve, or

[a] Guy's Hospital Reports, Third Series, vol. ii. p. 408.
[b] Braithwaite's Retrospect, vol. xxxiv. p. 430.

electricity passed along a portion of it, did not cause contraction. This proved that either the nerves or muscles were paralyzed; in the case of the nicotine the muscles were proved not to be affected, as they contracted when the stimulus was applied directly to them; and in the case of the wourali it was shown that they were affected, as they did not contract. We may therefore conclude that wourali acts on the muscles, but has no influence on the nervous system. I regret that I am unable to enter more minutely into those experiments, but as they have not yet been made public by the investigator, I am not at liberty to speak more fully.

This question, as to the *modus operandi* of wourali, &c., is, I conceive, a matter of no small moment in the treatment of tetanus. But in order to explain its importance, I must here beg to revert to Dr. Copland's theory, that the secondary cause of tetanus (that affecting the nervous centre) is caused by the violent action of the muscles, &c., for in this he appears to be in some measure in error, though until we come to consider the action of such a medicine as wourali, the errors appear to be merely technical. Thus he looks upon the muscular contractions as demanding an increased supply of *vis nervosa*, and that, to supply this, increased energy was necessary on the part of the nervous centre, and hence the increased vascularity, as if the muscular contractions were the cause of the nervous force being developed; whereas, if we consider for a moment, we must see that it is the irritation transmitted from the injured part that induces an increased excitement of the nervous centre, which then develops the nervous fluid in unwonted quantity, and that the fact of the muscles not contracting under the influence of this nervous force, either in consequence of their being paralyzed by wourali, or any other cause, cannot diminish the excitement of the nervous centre, nor prevent the development of the secondary cause of tetanus. But as nicotine and chloroform have at least some action on the nervous system, they may be capable of rendering it insensible to the irritation transmitted from the local injury, in which case they would prevent the development of the secondary cause as long as their influence was fully kept up. I would, therefore, recommend that if it be impossible to remove the local irritation (i. e. the primary cause), one of those agents should be used, but if this be got rid of, the preference should be given to the wourali, in consequence of its not acting on the heart or other involuntary muscles. The surgeon should, however, be fully prepared to keep up artificial respiration in the event of that function becoming seriously embarrassed.

If, however, we hope to cure tetanus after the secondary cause has commenced, we must not depend on those agents alone. We should use one or other of them on account of the good effects already alluded to, but we must at the same time pay due attention to the nervous centre, and remember that this is the part now chiefly engaged. It must be admitted that many cases of tetanus have been treated very actively for myelitis and spinal meningitis, and that the result does not warrant our pronouncing it a more successful plan than some others; but then it is to be remembered that while this was being attended to, other means were neglected; whereas, I have no doubt that if ever tetanus be brought to rank as a disease amenable to treatment, it will be by the adoption, not of any one plan of treatment exclusively, but by a combination of all the means that are indicated in its different stages:—

First, the removal of the primary cause (the local irritation).

Secondly, in the event of this not proving efficacious, our attention is to be turned to the consideration of the secondary cause, and meanwhile we must endeavour in all stages to allay the convulsions by the most appropriate agents; nor are we to be unmindful of such means as the peculiarities of each case may require, as stimulants, antiphlogistics, tonics, sedatives, purgatives, &c.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Des Anéurysmes et de leur Traitement. Par Paul Broca. Paris: Labé, 1856. 8vo, pp. 931.

The many and important improvements which have taken place in almost all the varied and numerous branches of the surgical department of the profession, within the last half century, have gradually wrought such a complete revolution in its character as to render it, in fact, a science quite different in its nature from what it originally was; and many of those so-called standard rules, which were once observed with such jealous and scrupulous fidelity, have been latterly neglected or wilfully transgressed, under the benigner influence of that additional light revealed by the discoveries of modern science. The bonds once loosened forming the chain which so servilely bound our predecessors to follow in a beaten track, it is astonishing with what rapidity improvement has followed on improvement, and one startling fact has scarcely been published to the world at large, before another appears closely in its wake, as striking in its conception as amazing in the results which it may yet produce in the career of those affections of which it professes to treat. Taking, as an example, conservative surgery—how little, as an art, was this understood some years ago! How many are the lesions formerly attended with such a tremendous sacrifice of parts, so essential to the different functions of the animal economy, that now yield successfully to its more genial sway, leaving to the unfortunate sufferer, in many instances, powers but slightly impaired, and a freedom from that deformity, generally the inevitable result of the most favourable operation! Nothing perhaps could have been more completely calculated to impress the mass of mankind with a horror and loathing of our profession than the heroic practice advo-

cated and too often practised by our forefathers; and though their object was, undoubtedly, the anxious desire to confer on their patient the greatest amount of permanent security, still they appear sometimes to have overlooked altogether the immense expense at which such a condition of affairs might occasionally be purchased. The operating surgeon should always bear in mind, that the friends or relatives of the mutilated victim will invariably look only to the result, and but rarely to the cause, that may have rendered such a result absolutely necessary; for their circumscribed faculties can never understand, much less appreciate, that quick acumen and power of discrimination which will devote, without hesitation, to destruction an offending, but unimportant part, in order to insure the safety of the whole.

It would be well indeed, if, under all circumstances, we could observe that happy medium in our conduct, which would enable us to come to a proper decision in all those instances where the scales are almost evenly balanced as to the necessity, or the reverse, of a capital operation ; but, most unhappily, the prestige invariably consequent on its successful execution, amongst the profession at least, must always create a marked preponderance in favour of the attempt. In cases of this kind we are strongly of opinion that many a grievous fault has been committed, and, in confirmation of this view, we could quote more than one undoubted instance, that has come immediately under our own personal inspection, where a capital operation was performed for a suspected lesion, which had its existence only in the fertile imagination of the operator himself. Hence it would appear, that the operating surgeon is too often hurried away by a vain but insatiate desire of applause, appearing to forget altogether, that the very highest skill and dexterity that he may display are, after all, but purely mechanical, requiring no exercise of superior genius, and that, at any moment, another with stronger nerve and nicer manual adaptation, though with only a tithe of the same talent and acquirements, may with facility rival, nay, even completely surpass, his most finished and successful effort. But let those two individuals be placed in such a position, where the decision of superior ability will depend on the anxiety to save, and not to extirpate, an affected part,—here the light of the superior intellect of the one will shine forth with unclouded brilliancy, strongly contrasting with the vague and ill-directed attempts of the other, powerless in his struggles against the ravages of a disease, the nature of which his inferior capacity is unable to comprehend, and is as utterly inadequate to control. Not so the master-mind, strong

in the instinctive feeling of its own resources, meeting the insidious enemy step by step—retarding where he cannot effectually check its continually advancing progress—watching patiently for that favourable moment when a decided measure on his part may be attended with a chance of success, and ultimately triumphing, by a happy combination of judicious skill and unyielding perseverance.

We have hazarded these remarks, not that we would utterly disclaim the employment of measures, no matter how painful in their nature or disagreeable in the consequences which they must necessarily entail on the patient, but that we would most strenuously protest against their indiscriminate use, more especially where the same results may be accomplished by means more lenient and more in unison with the feelings entertained by the great majority of mankind. The strongest mind will naturally recoil from even the contemplation of a capital operation; and how much less calculated must they be to tolerate its stern reality whose constitutions are shattered by suffering, whose nerves are completely unstrung, and whose entire symtem is wound up to that unnatural pitch of excitement that the slightest cause will be always sufficient to induce an amount of agitation, in many instances more painful to him that is compelled to witness it than to the actual sufferer himself. It is in cases of this description that the talent of the accomplished practitioner becomes conspicuous. His gifted mind, pondering over every circumstance, will ultimately devise some happy expedient,—incomplete, indeed, at first, but gradually improving in its adaptation, until at length it is rendered fully capable of superseding the more barbarous system that preceded it, though rarely to the lot of a single individual devolves the honour of bringing it to its last stage of perfection.

Have we not, in these few sentences, contained the entire history of aneurism, with its progressive treatment from the earliest days to the present time? The character of that alarming tumour, throbbing so fiercely and without intermission from the effects of the vital fluid that permeated its interior, was at first but little understood, until experience, impressed from numberless observations, slowly established its real nature, showing that its integrity was essential to actual existence, as it was discovered that from its ruptured walls must flow that bright arterial current on which depended the principle of life. Hence arose the age of reckless amputation, with the harrowing and revolting searing-iron,—the only means at that period known for checking those impetuous streams that poured forth their contents at each successive gash of the rapid

knife; and if complete success would have been the invariable consequence of this cruel and barbarous proceeding, we might have been inclined to regard the steps that were pursued with an eye of greater indulgence, as in cases of such imminent risk, where the very existence is jeopardized, the end must always justify the means employed to insure its preservation; but, most unhappily, the exact reverse was generally found to obtain; and even in those rare exceptional instances where recovery did occur occasionally, every candid mind must acknowledge that this favourable termination was purchased at a price so painful and agonizing to the wretched patient, that the suffering he was obliged to submit to might fairly compete in intensity with many of those fiendish tortures that once formed those foul and degrading stains in the annals of our unenlightened criminal code. It was utterly impossible that a practice so barbarous should be allowed to continue as our knowledge of the principles on which the safety of the human frame depended was gradually opened to the comprehension, and we accordingly find that the happy idea of the controlling power of the ligature over the bleeding vessel was most fortunately suggested to the imagination of one man, Anel, to whom is unquestionably due the merit of its first application, the success of which has been confirmed by the experience of years. Still, it was reserved for another great luminary, John Hunter, to render this important discovery amenable to the treatment of the disease at present under consideration; and the steps which he conceived and so happily carried out were sufficient to overthrow for ever those horrible measures that we have already cursorily alluded to. Improving on the principles so lucidly laid down by him, his followers by degrees reduced the operation required for this formidable disease to a state of simplicity strikingly contrasting with the former mode that was thought necessary for its cure, and all rejoiced at such a complete revolution, which comparatively appeared to leave nothing further to be desired. But the intellect of man, unbounded in its resources, would truly seem to recognise no law which would place a limit to its progress, and the last few years has witnessed another change as remarkable in its nature as conclusive in its effects,—we of course allude to the cure of aneurismal tumours by compression. That this method of treatment—from whatever source the idea may have first emanated—owes its present stable footing to the perseverance of Irish surgeons, there cannot exist the remotest shadow of a doubt; as, in the very teeth of the extremest prejudice and opposition, they never for a moment relaxed in their efforts, but

laboured unceasingly, by a series of unquestionable experiments and well-authenticated facts, to accumulate such an extensive mass of evidence in favour of the doctrine which they were so anxious to establish, that their united testimony can now no longer be shaken, either by direct contradiction, or, what is more difficult to be encountered successfully, by the more insidious attack of ridicule. We are deeply gratified to find that M. Broca, in the work before us, has not failed with a manly candour to acknowledge the claims which they possess, and in doing so to quote the names of several of our Dublin surgeons, with many of their cases, in connexion with his essay on Compression.

M. Broca, in the first part of his volume, has devoted his initiatory chapter to the pathological consideration of aneurisms, commencing by stating, very truly, it must be allowed, "that the above nomenclature has been applied to several affections which differ from each other in certain particulars, but which in the meantime still resemble each other sufficiently to render it useful to the practitioner to submit them to a common study. With respect to symptoms, aneurisms are tumours, situated over the track of arteries, in general pulsatile, capable of producing a *bruit de souffle*, very often having a tendency to increase in size, and owing those different characters to their connexion with the arterial circulation.

"With regard to treatment, aneurisms still possess a certain similitude. Although each kind may give rise to particular indications, there is still a certain number of therapeutic methods, essential to be studied in their generality previous to discussing special applications.

"But those analogies ought not to make us lose sight of the differences which exist in the several forms of aneurism —differences that pathological anatomy points out to us, that pathology confirms, and of which therapeutics is compelled to take cognizance. I cannot, therefore, dispense with the obligation of devoting some pages to the classification of Aneurism."

In accordance with this resolution, the author proceeds at once to inquire into the propriety of including promiscuously amongst the class of aneurisms many of those tumours which have hitherto borne that designation; and amongst the first rejects that uniform dilatation of an artery described by Senac, denominated by Breschet "cylindroid," and by Chelius, "true diffused aneurism," but now better known by the more proper appellation, "arterial dilatation;" he also throws aside "the cirsoid aneurism" of the former author, referring it to the class

of " arterial varices," as suggested by Dupuytren. In this we conceive he has acted most correctly, and more so still in basing his definition of this affection on its anatomical characters, which he has done in the following words:—

" An aneurism is a tumour, circumscribed, filled with blood in a liquid condition, or coagulated, communicating directly with the canal of the artery, and limited by a membrane which bears the name of a sac."

In adopting this definition, M. Broca at once acknowledges that it will not be found sufficient to embrace every description of this peculiar lesion, as, for example, those that are at present recognised as of the diffused form. This naturally leads him to the consideration of this individual class, to which several pages are devoted, displaying a vast amount of information and reasoning; and he ultimately terminates his observations on this subject by the following detailed account of a particular variety, of which we have had an opportunity of observing more than one specimen, not only on the vessels indicated by the author, but likewise on those of the brain, the basilar and vertebral arteries having been actually studded over with them.

" I will not farther insist on the second variety of aneurism which Corvisart has discovered, and which has given occasion to disputes. Those aneurisms wich have been designated under the name of cystogenic are formed in the following manner: a cyst with walls very dense, as if composed of cartilage, or of a calcareous character filled with a substance like tallow, or of an atheromatous nature, originates in the thickness of the arterial parietes, and expands, constituting an hemispheric tumour, the size of which, always very small, varies with the caliber of the diseased vessel. This cyst, situated between the cellular and middle coat, may after a variable period open into the cavity of the artery. It produces at first an orifice almost capillary, which gradually enlarges, and finally the entire partition which separates the cyst from the artery having been gradually destroyed, there remains but the hemispheric shell, remarkable for its regularity, communicating with the vessel by an opening extremely large and perfectly round. All the stages of this singular affection existed upon the branches of the splenic artery that M. Leudet presented three years ago to the Anatomical Society. Upon the piece were observed three tumours—one without communication with the artery; another opening into the vessel by two foramina, like those made by the point of a pin, while the orifice of the third was sufficient in capacity to equal that of the

diameter of the aneurism itself. Some months after this presentation, M. Leudet showed to the Anatomical Society another tumour of a similar character, situated upon the track of the renal artery. After having studied those two preparations of M. Leudet, I confess that I am inclined to admit the reality of cystogenic aneurisms. In the meantime, serious objections have been raised in opposition to the explanation of the facts of this description. Hodgson has drawn our attention to the circumstance, that certain aneurisms cured by depositions of clots with the preservation of the permeability of the artery may give existence to tumours capable of simulating arterial cysts. He has not hesitated to assign to this etiology the facts observed by Corvisart: according to him, arterial cysts, far from being the cause of aneurisms, should have the opposite effect. It is unquestionable that the majority of the cases of cystogenic aneurisms that have been brought forward in evidence are connected simply with aneurisms cured, or in the process of cure—thus, for example, Mr. Guthrie, who claims, and with reason, for Stenzel the fact of first having pointed out the existence of cysts contained in the arterial parietes, has not observed that the case of Stenzel is very evidently connected with an aneurism of the aorta, obliterated by means of fibrinous layers. Had he read thoroughly the description of Stenzel —had he cast his eyes upon the plate that is appended to it, he would certainly have avoided this error. From what has been previously stated, the conclusion may be drawn, that arterial cysts are now generally constituted by aneurisms that have been cured; but that there is within the scope of science a very small number of cases tending to prove that these cysts may be primitive, may open consecutively into the corresponding artery, and so become the cause of a very rare variety of aneurism.

"Be it as it may, cystogenic aneurisms to the present time belong only to pathological anatomy. Their clinical history is utterly unknown. All the examples, more or less conclusive, that have been collected, are connected with internal arteries, such as the aorta, splenic, renal, mesenteric. These motives are sufficient to induce me to abstain from noticing them at a greater length in this work."

We are extremely chagrined at this determination of M. Broca, as expressed in the last line or two, for, as already remarked, the opportunities afforded by a large dissecting-room had rendered us rather familiar with several examples of the peculiar affection detailed by him; we, however, candidly confess our utter inability to offer the remotest explanation calcu-

lated to solve the problem as to the real mode of their production, but are, however, perfectly satisfied on one point,—that none of the solutions hitherto hazarded can possibly be correct, and we make this statement as the result of our own observation, as well as with the firm hope that M. Broca will yet direct his inquiring mind to the investigation and complete elucidation of this perplexing subject.

Whoever is really anxious to obtain a rational, and at the same time a distinct view of the classification of the several forms of aneurism, with the causes on which they have been based, should carefully read the author's remarks on this subject. We are satisfied that the information that must be derived from such a perusal will more than amply compensate for the time expended in the task; while the gratification experienced will be immeasurably enhanced by the plain, simple, and manly style in which every circumstance is detailed, calculated to throw an additional gleam of light on some disputed point. This chapter terminates with an ingenious table, conveying at a single glance a very intelligible idea of the phases of distinction that have been observed in this peculiar lesion, with the nomenclatures adopted from each; and we can only express our regret that we cannot afford room to extract the whole for the benefit of our readers.

The second chapter is occupied with the consideration of the etiology of this formidable disease, and while its several causes are very ably investigated, many ingenious theories, specious at a first glance, are either overthrown, or at least reduced to such a tottering condition as to render their defence scarcely tenable in a rational point of view. In the course of these observations he really appears not to have overlooked a single circumstance which could by possibility throw light on this subject. Age, sex, climate, excess, with the influence they may exercise in the production of the lesion in question, have each received their due amount of attention, and he sums up the whole with the following statement, the importance of which, if accurately correct, cannot be too highly estimated by the operating surgeon:—

"As far as the lesion is concerned, which precedes the formation of spontaneous aneurism, it oftentimes occupies a very great extent, and, where ascertained by autopsy, beyond the point engaged by the tumour. This is generally the case in aneurisms of the aorta; but with regard to external ones, the fact is not similar; more usually the vessel is healthy above and below the orifice of the sac. I am the more emphatic upon this important peculiarity, which many authors have failed to

recognise, and which will meet with its application farther on, when I shall speak of the ligature."

By a natural transition the next portion of the work proceeds to detail at some length the symptoms, progress, and termination of aneurisms in general,—at the same time carefully drawing attention to the many complications which may render their diagnosis sometimes uncertain, and in many instances almost impossible. The difficulty of always being able to draw the nice line of distinction between those affections and others of a quite different stamp, though certainly bearing a striking resemblance to them in their general characters, is admirably shown, while, to confirm and corroborate his views, the names of Dupuytren, White, Boyer, and he might have added Liston, are adduced in support of the fact, that ability of the highest order, combined with lengthened experience, cannot always be relied on as an unfailing safeguard under every circumstance against certain fatal mistakes in practice. No doubt, the advice which the author is so anxious to impress is incontrovertible in its excellence; but whilst admitting at once the justice of the precept, "that every tumour situated over the track of an artery should always be regarded with a certain degree of suspicion, and treated accordingly with a becoming caution;" still it must be as candidly acknowledged that such a mode of proceeding is as certainly antagonistic to the principles of the surgeon, whose long and extensive practice may have rendered him comparatively familiar with almost every form of disease in its varied and protean forms, and who would look upon the premeditation prescribed simply as a process of hesitation, and, as such, a species of reproach in the eyes of the world. The abnormal swelling which he may be called on to deal with may be in its outward appearance precisely identical with some hundreds of others, which he has encountered in the course of his career, actually occupying the same exact position; and can it be wondered at that he should employ the same rapid and decisive line of treatment which had eventuated so successfully in former cases, or that he should only be awakened to the inaccuracy of his diagnosis by observing the bright arterial flood following the stroke of his knife, a termination when repentance for his unintentional indiscretion may be felt and testified perhaps too late. We have made these observations not through any desire to cast even the shadow of a slur upon the memory of the illustrious dead. Such an act would be simply ungracious, not only on our part, but likewise on that of the author whose work we are so freely criticizing in all the plenitude of strict professional confidence.

The fame of those pioneers who so gallantly guided the way in the foremost ranks of advancing science should be pure, and shielded from the very vestige of a stain, and while dwelling gratefully on the various obstacles which their skill and intrepidity have so effectually removed from our path, it should be our object to imitate the conduct, not of the recording angel as described by Sterne, but rather that of the accusing spirit, who, actuated by a feeling of scrupulous conscientiousness, inscribed the grave charge originating in man's frailty in the pages of the leger of life, to be a moment afterwards blotted out for ever by the gushing tear of pity and forgiveness.

To impress us still farther, however, with the necessity of acting with prudence, when dealing with tumours situated in a suspicious locality, he favours us with a detail of the steps adopted by the celebrated Roux, which shows most unequivocally the absolute value of proper precaution in cases of this nature.

"The diagnosis is still more difficult when a real abscess is formed in the cellular tissue covering an aneurism. When a case of this kind is presented to our observation, we ought to hold ourselves prepared for every emergency, and to act as Roux did, who, previous to opening a purulent tumour at the bend of the elbow, placed himself in the attitude of one about to perform the operation for aneurism; the incision gave exit to pus, then to clots, and lastly to arterial blood. Just as had been suspected, the abscess had masked an aneurism; but an assistant had already his finger on the brachial artery; this vessel was instantly compressed, and Roux was enabled to put in practice at once the operation of opening the sac. The patient recovered without any untoward consequences."

To such as are desirous of obtaining a succinct, but, at the same time, comprehensive idea of the mode to be pursued, in order to become proficients in the diagnosis of this affection, we would most strenuously recommend a careful perusal of the whole of this chapter, as well as the entire of the succeeding one, which treats especially of the pathological physiology of aneurismal tumours. The latter, in particular, abounds in many interesting details, not generally familiar to the reader, and has most fully discussed every possible condition that has been hitherto observed or noted as the actual cause or consequent result of this lesion. The quantity of new views which have been offered on this subject are really astonishing; and what renders the whole of such decided importance is, the accurate, but plain and simple, manner in which everything is

laid down ; all redundancy and attempt at display being resolutely sacrificed to a principle of praiseworthy utility.

In the sixth chapter we have a very excellent *resumè* of all that has been hitherto written on the spontaneous cures that are occasionally found to occur in connexion with aneurismal enlargement, and here we find the names of several of our celebrated British surgeons receiving that tribute of approbation to which they are so richly entitled from their zealous and unremitting researches in this peculiar branch of the subject. Amongst many others, we find those of Hodgson, Cooper, Home, Crisp, &c.; and, what adds materially to the value of the praise thus bestowed is,—that it has not been conferred indiscriminately; but all the doctrines which they may have advanced have been carefully criticized, and only allowed to stand when they have borne the test of a sifting and impartial examination.

The second part of the work enters very elaborately into the consideration of the several modes pursued in the mechanical or artificial treatment of aneurisms, and it strikes us that the best means of presenting a faithful and, at the same time, a concise view of its varied contents, is to give it in the tabular form composed by the author, which is, in fact, a complete epitome of the observations to be found in each of the succeeding chapters:—

"TABLE OF THE THERAPEUTIC METHODS.

1st. Direct Methods.

Methods which have for their Object the Suppression of the Tumour.

1. Opening of the sac (method of Autyllus).
2. Extirpation (method of Purmann).
3. Cauterization.

Methods which have for their Object the Modification of the Tumour.

1. Styptics.
2. Moxas (method of Larrey).
3. Endermic method.
4. Acupuncture (method of Velpeau).
5. Twisted suture (method of Malgaigne).
6. Kneading (method of Fergusson).
7. Application of heat (method of E. Home).
8. Application of cold.
9. Direct compression.
10. Galvano-puncture (method of Guerard and Pravaz).
11. Injections producing coagulation (method of Monteggia).

2nd. Indirect Methods.

1. Medical treatment (method of Valsalva).
2. Ligature above the sac (method of Anel).
3. Ligature below the sac (method of Brasdor).
4. Ligature above and below the sac.
5. Indirect compression.

3rd. Amputation.

It would be attended with very little positive advantage, on our part, to enter into a critical review of the several subjects comprehended in the above table, exhibiting, as it certainly does, almost at a single glance, every known mode of treatment which has, at different periods, been suggested or actually employed for the purpose of modifying or effectually checking the progress of this fearful affection. Many of them have now become simply matters of history, and may be considered as altogether obsolete, of no earthly interest to any one, except to those curious in such matters. Still, to present a correct and complete summary of all that has been successively introduced into practice, with the humane object of endeavouring to arrest its fatal career, M. Broca has, with a most unparalleled diligence, taken up and investigated each of the above methods, in a manner highly ingenious, and calculated to reflect great credit on his powers of discriminative analysis. His chapter, however, on the introduction of the ligature,—with its gradual advance into general use, as its power in controlling hemorrhage became better understood and more properly appreciated,—whilst replete with interest to the inquiring mind, from the admirable manner in which it has been conceived and written, is yet, unfortunately, tinged with certain features of undeniable prejudice, strikingly contrasting with the candid and generous spirit which pervades the other pages of the volume. In all that we have ever written, it has been our especial aim to recommend highly that praiseworthy principle of nationality which would lead an individual to exert himself to the utmost of his power to elevate that country to which he has been indebted for his birth, to the loftiest pinnacle of literary eminence; but, at the same time, we have as constantly and as energetically protested against every specious attempt at accomplishing that object, unless on grounds, the truth and purity of which would not admit of question. As far as we are individually concerned, it would be remote indeed from our purpose to enter into a useless and necessarily acrimonious controversy, in the vain hope of striving to settle a disputed point, dating so many years back, and which has been so amply

discussed by the most accomplished writers on both sides; neither have we any wish to express an opinion in whose favour the weight of evidence, or, more properly speaking, argument, may appear to preponderate. Did we presume to do so, it is more than probable that a certain amount of laudable prejudice might lead us to adopt and countenance the pretensions of our own countrymen, and, in so doing, we would be pursuing precisely the same line of conduct that we have a moment ago deprecated in another, an inconsistency which we are most anxious to avoid, if possible, by leaving the solution of the difficulty in the hands of others, curious in the elucidation of such details; while we are perfectly satisfied with the naked fact—that the merit of the discovery, let it belong to whom it may, was quite sufficient to blot out for ever, from the records of our profession, a mode of treatment, horrible in its very nature, barbarous in its execution, and marked by a feature still more condemnatory, most uncertain in its ultimate issue.

The article on compression is most admirably written, and is one with which every practical surgeon should study to render himself familiar. M. Broca has taken the trouble of tracing this innovation in modern practice to its first source, has accumulated a multitude of facts bearing on the subject, and has exhibited the most scrupulous care in faithfully ascribing to each individual directly connected with its operations the full amount of notice which his exertions would appear fairly to demand. Of his strict impartiality in this respect the Irish surgeon, at least, can have no just cause of complaint, for his services have neither been overlooked nor underrated: indeed, they seem to hold a very prominent position in the author's estimation; and we find the names of Hutton, Cusack, Tufnell, Adams, Todd, Duggan, and Bellingham, freely quoted, accompanied by a succinct but sufficiently copious account of the several cases that were under their immediate treatment. To the last-mentioned gentleman, in particular, he has assigned —and very properly, too, in our estimation—the merit of having first accurately and rationally explained the principle by which the cure by indirect compression is effected; an explanation apparently trivial at the first glance, but which is now very justly considered to be one of no small importance when viewed practically, as it has not only simplified the difficulties and removed much of the anxiety of the surgeon, but has likewise saved the wretched patient from an exceedingly great amount of unnecessary suffering and pain,—an advantage in itself of incalculable benefit.

Could we abstract, with any pretence at selection, from this

chapter on compression, we confess at once it would gratify us much to do so, but the whole is so beautifully dovetailed together that we feel a positive reluctance to violate the harmony of its continuity by hazarding a chance extract. More than amply will a careful perusal compensate for the labour thus expended, and all must find in its pages enough to awaken their interest, to gratify their curiosity, and to improve and enlarge their understanding.

The Hygienic Treatment of Pulmonary Consumption. By BENJ. WARD RICHARDSON, M.D. London: Churchill. 1857. 8vo, pp. 115.

THAT the value of hygienic principles and their practical application have become to a certain extent recognised, and are becoming every day more fully appreciated, is amply attested by the success attendant on the modern treatment of epidemic diseases, more especially with regard to the *preventive* measures whose adoption is suggested by these principles. The development of the *remedial* efficacy of hygienic medicine is as yet, however, in a condition of more tardy growth; notwithstanding it may be demonstrated that the same principles are as useful and as necessary in the treatment of actual disease as they are in its prevention. In the work under consideration, the author has placed before the profession, in a clear and impressive point of view, the practical advantages arising from a thorough recognition of these principles in dealing with phthisical affections, tendencies, and predispositions.

The greater part of the present essay, we learn from the preface, has been before the public already in another shape, having appeared some time ago in the pages of the "Sanitary Review and Journal of Public Health." The reappearance, therefore, of the work in its present convenient form is equivalent to a second edition. But, while this fact releases us in some degree from the obligation of entering into a full analysis of a work which is not altogether new, we cannot forego the pleasure of recording our appreciation of the enlarged and philosophic views of the author, as well as of the honest and straightforward way in which, in defiance of the conventional prejudices and fashion-founded errors which abound in these times, he has enunciated those broad principles upon which alone the development of a phthisical diathesis can be successfully counteracted, or the progress of tubercular degeneration retarded.

It is unnecessary to enumerate all the rules which form collectively the hygienic code; these rules, in all amounting to twelve, constitute the subject-matter of the first five chapters, in which the author discusses the various topics with considerable ability; and at the same time points out clearly the difficulties which attend the practical carrying out of some of the sanitary regulations, owing to particular causes.

Having shown that in order to obtain perfect success in the practice of medicine, the hygienic and curative systems of treatment must be conjoined, and having dwelt at some length on the subject of the necessary hygienic measures, he next proceeds (in chap. vi.) to speak briefly of the medicinal treatment:—

"It seems to me," he says, "that even the administration of medicines themselves must be performed by hygienic, or, in other words, physiological rules, if such administration is to be of real service. The idea of having a specific remedy for every specific disease is now pretty well exploded amongst the highly educated classes of medical practitioners, who see indeed that the whole course of medical inquiry, from Hippocrates downwards, has but discovered three, or at the most four, *bonâ fide* specifics, and these by accident; who see, further, that diseases are most easily cured by removing their efficient causes; who maintain that the true study of diseased action lies in the true study of life and its phenomena; who appreciate the fact that diseases of all kinds are nothing more than modified physiological conditions; and who, in practice, feel that, as with one or two exceptions, medicines are only specially useful in removing or relieving the special symptoms of a disease, so any disease itself, as a whole, is removable by the removal of the general influences which gave it birth, and by no narrower process or practice."

Again:—

"For my own part, I believe in no specific for consumption, although I believe fully in the invaluable qualities of some few medicines, when these are simply applied, are made to assume the character of foods as far as it is possible, or are directed, on physiological grounds, to the abatement of certain symptoms."

The medicines to which the author is disposed to attach especial value, in accordance with his experience in the Royal Infirmary for Chest Diseases, are,—fish oil, with quina and iron; opium, to alleviate suffering, to assuage cough and induce sleep; and gallic acid in full doses, for the purpose of arresting hemoptysis and night perspirations. He reports favourably of the practice of oil inunction, at least in the few

cases in which it was used; while he eschews the employment of counter-irritation altogether.

The work concludes with a very excellent chapter on the important subject of ventilation. In it (chap. vii.) are embodied several facts which may be useful at first sight; it is intended, moreover, as an index to sources of further information for those who are interested in the question to which it directs attention.

On Stricture of the Urethra. By HENRY SMITH, F.R.C.S., Surgeon to the Westminster General Dispensary. London: Churchill. 1857. 8vo, pp. 280.

IT is a very pleasing task to dwell upon the contents of Mr. Smith's valuable contribution to practical surgery. No doubt, the morbid condition, stricture of the urethra, has afforded an almost exhaustless theme, and by some it may be considered that enough has been written, — for numerous indeed have been the goodly volumes published within the last few years, and much, too, in the current periodicals of the day, on this intricate and difficult subject; while names well known to science, illustrious in surgery, are closely identified with its pathology; yet we welcome the volume before us, and we shall endeavour to lay before our readers a brief account of the able manner in which Mr. Smith has accomplished his task.

The book is divided into several chapters, each containing much valuable matter for reflection. In the first chapter the anatomy of the urethra is dwelt upon in a concise and practical way. We quite agree with the author:—

"The first step towards a right knowledge of the disease, and its treatment, is a correct view of the anatomy of the part in which the affection is seated; and in no one instance of surgical disease is it more necessary to have a clear conception of the structure and relations of the parts than when the practitioner is dealing with stricture of the urethra."

In the second chapter we find the pathology of permanent stricture, followed up through its various modes of formation. First, and that most common, when it is the effect of adventitious deposit, external to the mucous membrane, "in the surrounding or connecting tissue;" but, as the author observes, although, for the most part, stricture is produced by thickening of the mucous and submucous textures,—that is, the deposit

is *outside* the lining of the canal,—the disease may consist in a deposit *upon* the mucous membrane; and he then alludes to the researches of Mr. Hancock, "who had the opportunity of examining the urethra in some who died of this disease, and he ascertained that the obstruction was caused by the deposit of an adventitious membrane upon the free surface of the mucous lining itself." Such a condition was established and truly located by the aid of the microscope.

The varieties of stricture are next considered: the simple dilatable stricture; the hard, callous, undilatable stricture; the hemorrhagic stricture; the inflammatory stricture; and the irritable or contractile stricture, to which Mr. Syme has applied the name "*resilient.*" Mr. Smith takes exception to the term on these grounds:—

"There is no doubt whatever," writes the author, "that strictures of this nature are not unfrequently met with; but it appears to me that the peculiarity in these cases depends chiefly upon the condition of the system and the temperament of the patient, and that the tendency of resiliency, or recontraction, after temporary dilatation, is merely a portion, as it were, of that irritability which is an attendant upon certain forms of stricture, for there can be no difference in the material which is deposited underneath the mucous membrane, and which forms the stricture itself."

However, we rather incline to the qualified opinion with which the paragraph concludes:—

"Still it is not to be denied that there is a certain amount of distinction between mere *irritability* and contractility; for although in the majority of cases the two are combined, it will every now and then happen that there is excessive local and general irritability when an instrument is passed through a stricture, and yet the marked tendency to contract which is sometimes observable does not at the same time obtain."

The author next dwells upon two forms of impermeable stricture:—"A stricture may be impermeable to any instrument attempted to be passed during life; but, nevertheless, there may in reality exist a channel sufficient for one to pass." This fact is illustrated by a most interesting case. In very rare cases the stricture is truly impermeable, when there is "perfect obliteration of a portion of the canal, the result of extravasation of urine and sloughing of the tissues in the perineum." An admirable example of the powers of operative surgery, in this lamentable condition, is cited from the practice of Mr. Fergusson, when more than "2 inches of the canal

had been destroyed," yet the course of the urethra was ultimately restored. The ever-existing tendency in a stricture to contract is compared to that inherent in the cicatrices occurring after burns: hence the necessity of "an opposing influence exerted in the shape of continual dilatation by mechanical means."

We quite agree with the author, that traumatic stricture is by far the most obstinate and intractable, while that produced by gonorrhœa, that seated in the spongy portion, is the most endowed with the power of contraction, consequently the most undilatable.

The various causes operating in the production of spasmodic stricture, and its several varieties, are most fairly put.

The statistical Tables, as to the seat of stricture, are highly interesting, drawn up carefully by the author from the preparations in the Museums of St. Bartholomew's, Cambridge, King's College, and the Hunterian:—

"In the specimens in St. Bartholomew's, twenty-five in number, the seat of stricture is as follows:—

1. Centre of spongy portion.
2. Two inches from orifice.
3. Just in front of bulb.
4. Bulb and membranous part.
5. Three inches from orifice.
6. One inch in front of bulb.
7. Three inches in front of bulb.
8. Bulb and membranous part.
9. Bulb.
10. Bulb.
11. Bulb.
12. Front of bulb.
13. Front of bulb.
14. Membranous portion.
15. Bulb, and in front.
16. Bulb and membranous portion.
17. Front of bulb.
18. Two inches from orifice.
19. Just in front of bulb.
20. Just in front of bulb.
21. Two inches and a half from orifice.
22. One at orifice, and just in front of bulb.
23. One at orifice, and just in front of bulb.
24. Just in front of bulb.
25. Just in front of bulb.

"In the specimens at Cambridge, eight in number:—

1. Two inches from orifice.
2. One inch and a half from orifice.
3. Just in front of bulb.
4. One inch and a half in front of bulb.
5. Just in front of bulb.
6. In bulb.
7. Bulb and membranous portion
8. Stricture throughout urethra.

"In King's College, twelve in number:—

1. Near orifice.
2. In bulb.
3. In bulb, and expansion across prostate.
4. In bulb.
5. In bulb.
6. Just in front of bulb.
7. In bulb.
8. In bulb and membranous part.
9. Middle of spongy portion.
10. Spongy portion.
11. In bulb.
12. In bulb.

"In the Hunterian Museum, forty in number:—

1. Middle of spongy portion.
2. Spongy and membranous part.
3. Just in front of bulb.
4. Just in front of bulb.
5. In bulb and in front.
6. In bulb.
7. Front of bulb and membranous part.
8. Membranous part.
9. Membranous part and bulb.
10. In bulb.
11. In bulb.
12. Middle of spongy portion.
13. Spongy portion.
14. Spongy portion.
15. Just in front of bulb.
16. Spongy portion.
17. Membranous portion.
18. Just in front of bulb.
19. Bulb and membranous portion.
20. Just in front of bulb.
21. Membranous and spongy portion.
22. In bulb.
23. Spongy portion.
24. In bulb.
25. In bulb.
26. Membranous portion.
27. In bulb.
28. Spongy portion.
29. Bulb and membranous portion.
30. Bulb and membranous portion.
31. Just in front of bulb.
32. Just in front of bulb.
33. Just in front of bulb.
34. In bulb.
35. Just in front of bulb.
36. In bulb and in front.
37. In bulb and membranous part.
38. Spongy portion.
39. In bulb.
40. Spongy portion.

"From the above Tables it will be seen that the seat of stricture is found in the membranous portion in eighteen cases,—less than one-fourth of the whole; and in all these but four, the stricture involves the bulb as well. In seventeen instances, the stricture is situated in some part of the straight or spongy portion, from the orifice to within an inch of the bulb; whilst in fifty of the specimens the disease is situated either in the bulb itself, or just in front of it. In only one instance is there stricture in the prostatic portion, and that is in the shape of a broad membranous expansion. Out of all these, the stricture is at the orifice in three cases only."

Mr. Smith concludes thus:—

"It will be seen that stricture is much more frequently met with in the bulb, or just in front of it; that it is found about equally in the membranous portion, and in the cavernous or spongy portion, at varied distances, between the orifice and an inch in front of bulb; that it occurs comparatively rarely at the orifice, and but seldom in the prostatic portion."

In contrast to the above Tables, we have drawn up one from the preparations in the Museum of the Royal College of Surgeons in Ireland, which we append here. In the main it supports Mr. Smith's views.

Specimens in Museum of Royal College of Surgeons in Ireland, thirty-two in number:—

1. Anterior to the bulb, and at orifice.
2. Immediately in front of bulb, an inch long.
3. From bulb to within an inch and a half of orifice.
4. Two inches and a half from orifice.
5. Four inches from orifice.
6. In front of bulb, and an inch and a half from orifice.
7. Long stricture; narrowest point anterior to bulb.
8. In front of bulb, and three inches behind orifice.
9. Partly in the bulb, partly in front of it.
10. Two inches and a half from the orifice.
11. Two inches and a half from the orifice.
12. Two inches from orifice.
13. Anterior to bulb.
14. At commencement of spongy division.
15. At glans, and one anterior to bulb.
16. A short way anterior to the bulb.
17. Three inches from orifice.
18. In front of the bulb.
19. In membranous portion and through bulb.
20. In front of bulb.
21. Three inches from the orifice.
22. At orifice.
23. At orifice.
24. Immediately in front of bulb.
25. In front of bulb.
26. Within an inch and a half of orifice.
27. Immediately in front of bulb.
28. Membranous part of urethra.
29. Contraction from prostate nearly to orifice.
30. In membranous portion.
31. Narrowest part, commencement of spongy portion.
32. At and in front of bulb.

The effects upon the canal itself, from stricture, are minutely investigated, and Mr. Smith looks upon the dilatation of the canal behind the stricture as "by no means of frequent occurrence;" and he arrives at this conclusion from "an examination of numerous specimens;" further, he quotes a passage from Mr. Guthrie's "Lettsomian Lectures" to confirm this view. However, by a reference to the preparations mentioned in the above Table, belonging to the Irish College of Surgeons, we shall find dilatation behind the stricture, variable in degree, characterizing many of them. It is so in Nos. 1, 2, 4, 5, 7, 8, 9, 10, 13, 14, 15, 16, 17, 20, 24, 26, 27: thus, in more than half the number we have that change so strongly insisted upon by Sir A. Cooper. We are quite aware that this dilatation does not exist in every instance; and in many, even when it does occur, it is only in a minor extent. This, too, is confirmed in practice; for we have seen some excellent surgeons endeavour to hit off the urethra by incision behind the stricture, and signally fail; yet we have cut upon it successfully in this region, both in its contracted and dilated state.

The further effects of stricture upon the canal itself are fully considered: impacted calculus, ulceration of the urethra, effects upon the prostate, perineal fistula, calcareous deposits behind the stricture; and lastly, the changes produced upon the bladder and kidneys. Mr. Smith concludes this part of

the subject by the following graphic description of the effects of stricture on the system at large:—

"I have now mentioned most of the effects of stricture as perceptible on the parts behind the urethra; as it has been seen that the disease, independent of the immediate symptoms and inconveniences attending it, produces most severe disorders in those parts which are immediately in connexion with the canal, and that these pathological changes increase in proportion with the obstinacy and persistence of the obstruction. But the mischief does not stop here; for, as the malady increases, its effects are by degrees exerted upon the general system, and all the important functions of the body become impaired. As the urine is continually obstructed, it accumulates in the bladder, and becomes decomposed; the kidneys are changed from their integrity, do not eliminate the component parts of the urine from the blood in sufficient force, and thus the blood itself becomes, as it were, poisoned; the patient gets into an irritable condition, becomes thin, loses his appetite, and being at the same time constantly tormented with the desire of making water, and harassed by the pain attending it, he loses his sleep, and soon becomes an object of the greatest commiseration. There is now an increased liability to congestion of the internal organs, and, above all, there is a tendency for the brain to become affected; and when death does ensue from the effects of stricture, the mode of dying is not unfrequently by coma."

Careful allusion has likewise been made to the effects of stricture upon the testicle, upon the veins and mucous membrane of the rectum, and finally, the most serious consequence, rupture of the urethra.

In the third chapter, the symptoms and causes of stricture are minutely investigated, while the eight remaining chapters are dedicated to the several modes of treatment.

"In consequence," writes Mr. Smith, "of this disease being chiefly a mechanical one, as it were, the treatment must be mainly mechanical, although it will be found that it is highly necessary to combine other measures with the employment of instruments."

These modes of treatment are very properly divided under three heads: dilatation, cauterization, incision. Of the *first*, there are three modifications: simple dilatation; permanent dilatation; rapid or forced dilatation. Of the *second* there are two methods, or rather the employment of two different substances, viz., nitrate of silver and potassa fusa. Of the *third*, under the comprehensive term, incision, the author lays down several varieties which are practised by the surgeons of the present day:—

1st. Internal incision, performed either from before backwards,

or from behind forwards. 2nd. Incision of the stricture from the outside, or perineal section, of which proceeding there are also two varieties: first, the section at the point of an instrument which cannot be passed through the stricture; and secondly, the section performed upon a grooved instrument previously passed along the urethra. For the furtherance of these several methods, the necessity for certain general measures is strongly insisted on, as well "as an acquaintance with those remedial agents which are powerful adjuvants in the treatment of stricture."

In speaking of the instruments used in dilatation, Mr. Smith gives a preference to the wax bougie.

"Although I have seen," writes this distinguished surgeon, "a large number of strictures treated by means of curved metallic instruments, and am aware that the majority of surgeons use them, I have become impressed with the efficiency and safety of the simple *wax* bougie, and am in the habit of treating cases with this instrument; and I am convinced, from what I have seen, that were it more frequently employed, patients would suffer less than they do, and that a speedier cure would be effected in certain troublesome cases."

And a little further on—

"That the actual and immediate dilatation of the urethra will, in a great number of cases, be more limited and less rapid, cannot be denied; still, it is my opinion, from what I have observed, that although, *apparently*, time may be lost by using the wax bougie, in reality the course of treatment is rendered shorter, because the use of the wax bougie is not accompanied with that irritation which so frequently obtains when metal instruments are employed, and thus it is not necessary that the treatment should be suspended. On the other hand, if the surgeon has a bad stricture to deal with, and examines the urethra with a curved metallic instrument, it happens not unfrequently that he is not able at first to hit the orifice of the stricture, and several attempts are perhaps made, with more or less force, before the instrument can be introduced into the stricture. I have often and often seen this happen in the hands of very competent surgeons. The consequence of this is, that if the urethra is irritable, the patient suffers a great deal; bleeding takes place, and there is considerable pain, and it will last for hours and days, so that it will be useless and hurtful to repeat the attempt to pass the instrument for some time. In some of these cases, when it cannot be got through the stricture, I believe the lining membrane of the urethra is lacerated."

In the main, we have no doubt that Mr. Smith is right, and if such ineffectual efforts are persisted in, the constitution

will resent it by rigors, fever, and other troublesome symptoms. Yet we have great confidence in the use of metallic instruments, when directed by a light, gentle hand. The gutta percha bougie, though extensively used by the French, meets with no peculiar commendation from the author; nay, an interesting case is recorded from the practice of Mr. Fergusson, where he performed the operation of lithotrity, and where the foreign body proved to be the end of a gutta percha catheter, covered with deposits, which had been broken in the passage some twelve months previously. We entirely agree with Mr. Smith, and consider that instruments made of this material cannot be depended on; in more than one instance we have had to extract from the urethra broken-off portions, and on two occasions to lay open the part for the removal of the fragment. We strongly advise both practitioners and students to study the admirable directions given by Mr. Smith as to the selection of an instrument, and the mode of procedure altogether when temporary dilatation of the urethra is decided upon; the subject is handled in the most masterly manner. A large number of interesting cases are introduced, each tending to enforce the practical lesson inculcated.

According to the author, there are three forms of stricture, which, under certain circumstances, may be treated by permanent dilatation. The first, that in which the stricture has existed for a long period, and is so tough and resisting that dilatation cannot be effected in any reasonable amount of time; such being especially troublesome to treat by temporary dilatation, when it is seated in the spongy portion of the urethra. The second condition is when the same kind of stricture exists, the cause of the malady being the result of a wound. The third form to which permanent dilatation is applicable is that to which the term *resilient* is applied by Mr. Syme, its chief characteristic being, that it is extremely irritable, and has a great tendency to recontract after an instrument has once been passed through. The accidental circumstances rendering it desirable to pursue this mode of practice are likewise dwelt upon by Mr. Smith, and most interesting cases given confirmatory of the salutary effects of the procedure. The two methods of permanent dilatation are given,—the '*dilatation permanente lente*' and the '*dilatation permanente rapide*' of the French. The untoward results which sometimes follow on this line of treatment are not held back, and we may add, in its adoption great watchfulness is necessary: we have seen the urethra slough after the application of the instrument for a few hours. The chapter on this subject is concluded with the following wholesome precept:—

"The grave objection to rapid dilatation is, that there is a chance of producing irritative spasm and bleeding in the urethra; and that, even after the stricture has been pretty well dilated, there is so great a tendency in the part to assume contraction; and I believe it may be looked upon as a truthful maxim, that the more rapidly a stricture is dilated, the sooner is recontraction likely to occur."

The seventh chapter, which treats of the management of strictures by caustics, is most admirably arranged; in every page there is practical matter, that redounds greatly to Mr. Smith's fame,—a careful perusal of it will amply repay the surgeon most busily engaged in active practice.

The treatment of stricture by division with the knife is largely entered into, and the cases to which it is applicable; and illustrations are given; the instruments required, and the operative procedure suitable after each method, are minutely described. The operation with which Mr. Syme's name is associated—division of the stricture upon a grooved staff—is dispassionately and truthfully considered, and Mr. Smith, in commencing his observations on the subject, thus sensibly writes:—

"Much angry contention has arisen in reference to this plan of treatment—into this it is not my purpose to enter; but having had several opportunities of witnessing this plan of treatment, I shall truthfully record the result of these observations, and shall draw my conclusions from the cases which will be mentioned."

Two cases are given where the operation was performed according to the directions laid down by Mr. Syme, and where the measure was "justifiable and suitable." In the first case, writes Mr. Smith,—

"A cure was to all appearance made, and this happy state of things lasted so long as the patient took the precaution of passing a bougie now and then; but upon his omitting this, his malady gradually returned, and his sufferings became similar to what obtained before. Nevertheless, a timeous recourse to dilatation put him right again, and this gentleman remained in capital health for some time to my knowledge."

Still, continues Mr. Smith,—

"A most striking fact is shown by this case; this is, that the external division of a stricture cannot be considered or depended upon as an *effectual* remedy by itself, and that, sooner or later, the disease will return, unless the precaution is taken to keep up occasional dilatation."

In the *second* case,—

"Temporary relief, and that too of a striking character, was experienced after the operation; but, as time elapsed, the symptoms returned; and the fact of the wound in the perineum reopening showed that the morbid condition had not been removed."

Still I must add, says Mr. Smith,—

"That the habits of this patient were unfavourable to recovery, for he drank freely, and committed other excesses."

Another case is given from the practice of Mr. Fergusson, where there were stricture and fistula combined. Mr. Smith's remarks upon the case are as follows:—"Now, in this instance, it cannot be doubted that the perineal section entirely failed in effecting the object sought." The symptoms were, however, relieved for a time; but writes Mr. Smith,—"This amelioration was of short duration; the malady returned with its former violence, and in the end the patient went away as bad as ever." It is but fair to add, however, that Mr. Smith did not consider this a favourable case for any operative proceeding. A fourth case is given where death followed *from* the operation. A fifth case is taken from the "Lancet," which was operated on by Mr. Coulson, and death followed from phlebitis. Mr. Smith's remarks upon this case, as applicable to perineal section, are so apposite that we shall transcribe them:—

"Here is another instance of death after the operation, the immediate cause being that which might obtain after any cutting operation; and it is not a matter of any surprise that phlebitis should occur after a proceeding where so vascular a tissue as that of the urethra has been cut into, and a large surface is left exposed which is being continually liable to irritation and inflammation from the urine coming in contact with it. Thus it would not be surprising if phlebitis were to occur frequently after the perineal section."

A very truthful analysis of this question has been entered into by Mr. Smith. He pledges himself to this, and the reader will learn how confidently he may rest upon his judgment:—

"Since the introduction of the operation by Mr. Syme," writes Mr. Smith, "there has been so much discussion among various members of the profession upon the merits of this proceeding, that the question as to whether the operation is either justifiable or beneficial is by no means settled, and it is not easy to come to any correct conclusion relative to the real merits of this means of treating stricture, because the parties who have discussed it have shown too much personal feeling, each one denying the statements of the

other, and thus almost entirely leaving the profession in the dark. This should not be so, especially as the question is a most important one, as affecting the safety and comfort of many individuals who suffer under the most severe forms of stricture, and as the remedial measure itself has been so strongly recommended by a surgeon of great repute."

After dwelling upon the cases already mentioned, Mr. Smith continues:—

"I have, however, lately seen a case which proves more impressively than the one just quoted that the operation of external section upon a grooved staff is not to be depended upon as a cure, and that a return of the disease and all its sad symptoms may be looked for even within a brief period."

Next follows an admirable example, likewise from Mr. Fergusson's practice,—the case comparatively recent (January, 1857),—where all the bad consequence of stricture returned as forcibly as they existed before the operation. An objection strongly urged against this operation rests in the fact that fistula often remains after the operation. A case is adduced, absolutely from Mr. Syme's own practice, to prove this assertion; and for others the reader is referred to Mr. Lizars' work on Stricture, published in 1851.

Death occurring after the operation is likewise ably remarked upon by Mr. Smith, and not long since he lost a patient from diffuse inflammation after its execution. The dangers of hemorrhage are next considered, and we shall let Mr. Smith speak for himself:—

"It seems, *a priori*, somewhat remarkable that it has never occurred to me to witness any uncomfortable amount of bleeding during or after the operation of cutting down upon the point of the catheter, and I must have witnessed nearly *twenty* cases in which it was done; whilst, on the contrary, I have known hemorrhage take place to an alarming and great extent, on more than one occasion, after Mr. Syme's operation. I think it may be accounted for in this way:—In most of the cases where the old operation was effected, the disease was of very long standing; the urethra had become converted into a hard, callous cord, as it were; the parts around the canal were in a great state of disease, the tissues being infiltrated, thickened, and indurated. In this change of texture the blood-vessels themselves must have participated: many of them, and especially the larger ones, had probably become partially blocked up; and thus, when divided, they did not pour out much blood. And, moreover, I have noticed, when the incisions are made through the indurated tissues of the perineum, that at first the divided vessels

bleed freely, but that they in a short time cease throwing out blood."

A case is next related by the author, showing that hemorrhage is of formidable reality. The whole management of this difficult case stamps the author as a surgeon of sound practical character, rich in resources according to embarrassments.

Finally, from a grave consideration of the subject in its entirety, the able author arrives at the conclusion—

"That the operation does not always what its promoter so strenuously affirmed,—'accomplish quickly, safely, and surely, what has resisted all the prolonged, complicated, and hazardous procedures which ingenuity has devised or patience endured.'"

And again:—

"It has fallen to my lot to have under my care cases which answer the description of those related by Mr. Syme, and which have been operated upon by him and other surgeons; but it has appeared to me to be unnecessary to subject a patient to an operation which may destroy life, unless a very pressing emergency exists; and this, in my opinion, does not obtain—except under rare circumstances—so long as an instrument can be passed through the stricture."

But we cannot enter further upon the subject at present. The last chapter treats of spasmodic stricture, retention of urine, and the treatment applicable according to the exigencies of the case. We may faithfully say the work has been well executed, and it is with an agreeable satisfaction we direct the attention of our readers to the valuable details so modestly set forth in it: none but a practical surgeon, one well up to all the minutiæ of this comprehensive subject, could have produced the work for which the profession is indebted to Mr. Smith. To the student it is a safe guide, as an epitome of all the modern views upon the subject of which it treats; to the practising surgeon it is invaluable, as bearing many practical hints which will assist him in his difficulties; to any one conversant with the subject of stricture of the urethra, and its numerous complications and fearful attendant symptoms, the value of the work will be at once apparent. The name attached to the volume is almost a sufficient guarantee for its intrinsic merits, as every one conversant with the improvements of modern surgery will freely admit; and we most heartily congratulate Mr. Henry Smith on having added this new laurel to those which he has already earned.

1. *Studier i Bråckläran.* Af Dr. Carl Benedict Mesterton, Chir. Docens vid Universite i Upsala.

   1. *Om Radicaloperation för Ljumskbråck (Med en planche).* Stockholm: J. and A. Riis. 1857. 4to, pp. 100.

   Studies of Hernia. By Dr. Carl Benedict Mesterton, Lecturer on Surgery in the University of Upsala.

   1. *On Radical Operation for Inguinal Hernia* (with a Plate).

2. *Bidrag till läran om Emboli.* Akademisk Afhandling. Af Albert Lindström. Lund. Berling. 1856, 8vo, pp. 69.

   A Contribution to the Theory of Emboli. An Academic Thesis. By Albert Lindström.

3. *Föreläsningar i Medicinens Historia,* hållne af J. W. Broberg, Bibliothekarie vid Kongl. Carolinska Medico-chirurgiska Institutet. Första Serien. Stockholm: Norstedt och Söner. 1856. 8vo, pp. 56.

   Lectures on the History of Medicine. Delivered by J. W. Broberg, Librarian to the Royal Carolinean Medico-chirurgical Institute. First Series.

4. *Berättelse om Sjukvården vid Kronprinsessan Lovisas Vårdanstalt för Sjuka Barn år* 1855. Afgiven af Professor Gust. von Düben, Andre Läkare vid Vårdanstalten. Stockholm: P. A. Norstedt och Söner. 1856. 8vo, pp. 62.

   Report on the Care of the Sick in the Crown Princess Louisa's Institution for Sick Children for the year 1855. By Professor Gustaf von Düben, Second Physician to the Institution.

5. *Handbok för Artilleri-Befälet.*

   Manual for Artillery Officers. 12mo.

6. *Om några väsentliga Fel i Barnauppfostran, och om det uppväxande slägtets fysiska försämring, samt behofvet af gymnastik, såsom ett upprättelsemedel. Föredrag vid Pedagogiska Föreningens årshögtid den* 21 *Maj* 1856. Af Dr. Herman Sätherberg. Stockholm. 1856. 32mo, pp. 21.

On some Essential Defects in the Education of Children, and on the Physical Deterioration of the Rising Generation, and the Necessity of Gymnastics as a Restorative Agent. An Address delivered at the Annual Festival of the Educational Association on the 21st of May, 1856. By Dr. Herman Säther berg.

1. Radical operation, or operation for reducible hernia, is defined by Dr. Mesterton to be a suitably executed surgical proceeding, the object of which is such a closing or contraction of a hernial passage that the intestines can no longer escape through it from their proper cavity; and he states the design of his present investigation to be to ascertain whether, and in what degree, a radical cure of rupture is possible, what we are justified in expecting from a judicious so-called radical operation, and how far the modes of proceeding now in use are capable of satisfying our requirements.

In former times, when the anatomy and pathology of hernia were little understood, when surgeons consequently were neither acquainted with, nor would venture on, any operative interference in the case of a patient who was brought by incarceration of hernia into immediate danger of life, and when palliative appliances in cases still reducible were much less perfect than they are in our day, the necessity of radical cure was, of course, more strongly felt than it is in the present advanced state of surgical science. The author gives a lucid and agreeably-written history, divided into three periods, of the means which have from time to time been devised with the view of attaining this object. We can do no more than follow him through the heads of his interesting account.

The more ancient history of the radical operation comprises, properly speaking, only two different principal methods, one by cauterization, the other by ligature or suture. The former is divided into that by means of the actual cautery, and that in which potential caustics were employed.

The chapter on the method by ligature is divided into five sections, treating respectively of the most ancient plan described by Paulus Ægineta; of that adopted by the itinerant operators of the thirteenth century, who castrated for all ruptures, the accompanying cauterization or ligature being considered as merely accessory; of the punctum aureum; of the sutura regia; and of the more modern method, in which the isolated hernial sac was tied, with or without excision of the same below the ligature.

To the second period, when surgery, and especially the

knowledge of hernia, had attained a position at the same time more scientific, and more in accordance with the principles of humanity, and, therefore, characterized by a regard for the preservation of the generative faculty, and, at least in the majority of instances, by a laudable desire to avoid or diminish the dangers attendant on the old modes of operating, belong the methods by incision and by injection. The method by incision was adopted in consequence of its being observed that a radical cure often followed the operation for strangulated hernia; the necessary degree of inflammatory action was sought *by the introduction of foreign bodies into the wound.* Peter Dionis, who died in 1718, was the first to try this method, and J. Mery and Arnaud successfully followed his example. Others endeavoured, in a milder way, to induce a sufficient degree of inflammation by scarifying the abdominal ring or the neck of the hernial sac. The method by injection was introduced by Schreger, in consequence of seeing a hydro-enterocele completely cured by the injection of red wine into the common serous sac. Tincture of iodine has since been employed by Velpeau and Jobert de Lamballe, tincture of cantharides by Pancoast, and the patient's blood by v. Walther. This method is not only attended with difficulties and considerable danger, but is imperfect in its results.

After devoting a section to the plan of obstructing the hernial canal with an organic plug, the idea of which was first suggested by Garengeot, the author passes to the consideration of the proceedings, the invention of which, during the last twenty years, has again attached a more general interest to the operative treatment of reducible hernia. Of these the first mentioned is Belmas' method, founded on the observation that certain animal substances, as gelatine and goldbeater's skin, brought into contact with a serous canal, produce in it a plastic exudation formed during the course of a gentle and completely local inflammation, while the foreign bodies are themselves absorbed. Bonnet's plan, proposed in 1836, is next described, consisting in passing needles through the base of a fold of integuments raised over the abdominal ring, and including the hernial sac, and thus bringing the walls of the neck of the sac into contact with each other, with the intention of effecting their adhesion by means of the inflammation excited by the needles.

The third plan considered in this portion of the work is Gerdy's method by invagination. Wutzer's modification of which is stated by the author to be the form which has been tried upon the greatest scale, and has afforded the best results. This

method is already before the English reader, having been fully described by Mr. Spencer Wells in the thirty-seventh volume of the Medico-Chirurgical Transactions[a], according to whom it has been employed twelve times by English surgeons, viz.:— six times by himself, three times by Jones of Jersey, and once each by Burmester (in Malta), Stretton and Cooke, and fifty-seven times in Germany. The only case in which this modification of the invagination method was followed by a fatal result occurred, according to Mr. Wells, in Brussels, but the patient was in bad health at the time, and the operation was unskilfully performed.

The author next alludes disapprovingly to Velpeau's subcutaneous scarification of the neck of the hernial sac, and with more favour to Mösner's seton applied in the inguinal canal *external* to the neck of the sac.

Reviewing the entire subject of the method by invagination, Dr. Mesterton concludes that it affords a prospect of a perfect radical cure in all cases where the hernial passage still retains the shape of a canal and is not extraordinarily wide, and where a hernial predisposition either does not exist or is little marked; and, in the latter case, where the disposition is evidently acquired and dependent on external circumstances, as profession, mode of life, &c., which can be altered, and where the patient has not yet passed the period of growth; and, secondly, that in all other cases, either only a temporary cure can with certainty be reckoned on, or only more or less improvement can be attained: for example, diminution of the hernial openings, and the possibility or greater certainty of retaining the hernia with a bandage; the author thus, as he himself observes, takes a middle position between the opposite parties into which the profession is at present divided upon this subject. Dr. Mesterton concludes this portion of his work with a recapitulation of the circumstances which should be favourable to the adoption of operative interference in hernia, as well as of the conditions which should be considered to contra-indicate such a proceeding. An extensive bibliography is added; and a plate is given, representing the parts concerned, and several of the instruments which have been employed in the operation by invagination.

This first of Dr. Mesterton's "Studies of Hernia" exhibits great research, and a thorough acquaintance with the subject he has taken in hand. The essay is written in a lucid and in-

[a] An abstract of Mr. Wells' paper may be found in the Medical Times and Gazette for November 8, 1856, p. 471.

teresting style; and should the remainder of the series be equally well executed, as we have no doubt will be the case, the entire will form a standard work upon the important subject of which it treats. The style of publication is in accordance with the excellence of the author's part of the work.

2. Hr Lindström's Thesis presents a comprehensive view of a subject which has, on more than one occasion, been before our readers in the pages of this Journal. It is considered under the heads of its literature; its history; of emboli in general; of emboli in the pulmonary artery, and its subdivisions; of emboli in the arteries of the brain; of emboli in the large arteries of the extremities; and of emboli in the visceral ramifications of the aorta abdominalis; and of capillary emboli.

3. With the office of Librarian at the Royal Carolinean Medico-Chirurgical Institute, Hr Broberg undertook the duty of delivering, at the close of each Spring Session, a course of lectures on Medical History and Bibliography. The first series, now before us, does not extend further than to the time of Galen.

4. In our twenty-first volume we noticed at some length Baron von Düben's First Report of the Hospital recently established in Stockholm for the Diseases of Children: we have now before us, from the pen of the same zealous physician, the Report of the Institution for the year 1855. The changes in the arrangement of the hospital during the year have been but few, consisting in the addition of one to the staff of nurses; colouring the floors of the wards in oil, to facilitate cleanliness; and the establishment of a drying-room at the top of the house. The admissions for the year, including 28 patients remaining in the house from 1854, have been 183; of these, 37 died, and 32 remained in hospital at the close of the year. The average daily number in the house has been 31·5; the average stay of each patient in the house was 63,—the maximum 341 days, the minimum 2 days. Experience showed the impossibility of restricting the admissions to children between the ages of six and eight; accordingly, 11 were admitted under the age of one year, and 38 at between one and two years. The condition of the hospital as to epidemics was, during the year, good. In the course of 1854, 7 children were admitted with hooping-cough, and were placed among the other patients without any of the latter taking the disease. At the close of the year there was no patient in the house affected with hooping-cough, nor did

any case of the kind occur until the 20th of February, on which day a girl, who had been admitted on the 14th of December for disease of the hip, and who had now suffered for some days from tracheo-bronchitis, was observed to whoop: 21 children, all admitted for other diseases, subsequently took the cough. In the beginning of September the epidemic had ceased. Of these 21 cases, 1 terminated fatally.

Of the epidemic cholera prevalent in the city, 6 cases occurred in the hospital, 5 proving fatal in children admitted for other diseases; diarrhœa, however, existing in 2 at the time of admission. Of these 5 children, 3 had been placed, one after the other, on the same bedstead,—which was constructed entirely of iron,—but with different bedclothes, in the ward for contagious diseases: 1 patient, subsequently admitted with cholera, recovered. These cases all occurred in the month of September, and on them the author makes the following remarks:—

"If this outbreak of cholera deserves the name of epidemic, it must be considered to have taken place without contagion, for, during the whole of the portion of the year prior to September, no patient was admitted with symptoms capable, under any circumstances, of being designated as choleric. In point of time, the cases which occurred in the hospital took place at intervals of 4, 8, 5, and 17 days, calculating between the day of the death of one patient to that of the sickening of another. The space of time last mentioned seems to be a rather long period of incubation. In all these cases the shortness of the premonitory period—sometimes not exceeding a couple of hours—and the violence of the disease, which did not appear to be in the slightest degree influenced by treatment, were remarkable.

"In autumn, contemporaneously with the cholera, occurred an epidemic of varicella, lasting from the 4th to the 25th of October, and affecting seven children. In December there were four cases of slight tracheo-bronchitis, and two of pneumonia.

"The hospital has thus, taken on the whole, suffered in a very slight degree from severe epidemic influences, and the diseases mentioned in the former yearly Report, as probable results of crowding together, have fortunately been absent during the past year."

The author adds tables of the diseases affecting the patients who were dismissed during the year, or remained over in the house to 1856; of the anatomical changes observed in 24 children whose bodies were examined after death; and of the

diseases diagnosed in 13 children who died, but were not subjected to post-mortem examination. We think a synoptical table of the apparent causes of death in all the fatal cases would be a desideratum in his future reports, as under the present arrangement it does not immediately appear to what the very high mortality, which, we may observe in passing, is greater than in 1854, is chiefly to be attributed. Valuable remarks are appended to Tables I. and II.; and we consider that the annual Reports of the Crown Princess Louisa's Institution for Sick Children, as published by Baron von Düben, will form a most important addition to the literature of infantile diseases.

5. The fifth work on our list is the hygienic and medico-chirurgical portion of a succinct and neatly got-up manual for the guidance of those who are intrusted with the care of troops.

6. Dr. Sätherberg commences his Address with a serious charge against those to whom the education of the now rising generation of Sweden is intrusted, that ignorant of the intimate connexion between mind and matter, body and soul, they utterly neglect the physical training of their pupils; and he states that in consequence the Swedish youth are to be described as "of weakly form, fleshless, bloodless, half extinguished, old-visaged;" a wretched picture of the subjects of him who boasts to be King of the Goths and Vandals, and descriptive of unpromising materials to supply successors to those victorious hosts who, a century and a half ago, were more than a match for the united efforts of Denmark, Poland, and Russia.

The author next deprecates premature forcing of the intellect, and in reference to this portion of the subject quotes Salzman's apothegm:—"Make thy children wise betimes, and they will quickly become fools."

Dr. Sätherberg considers that judiciously employed gymnastic exercises will have a most beneficial influence upon children's studies; but in advocating these he appends the salutary caution that, while it is easy with their aid to strengthen children, it is also easy by the same agency to injure them. Of the truth of this there can be no doubt, and we are convinced that many have by such means produced an abnormally developed and powerful condition of the muscular system, at the expense and to the serious injury of the more vital organs.

Varied as are the subjects of the works with which the diligence of our Swedish colleagues has supplied us during the last few weeks, the number of their contributions has been so

great that we have been obliged to consider them together. As usual, these contributions afford evidence of the sound judgment, energy, and acquaintance with the progress of science in other countries observable in the majority of the works which reach us from the same quarter, and which render the task of the reviewer a pleasing duty.

A Catechism of the Medicine and Surgery of the Eye and Ear, for the Clinical Use of Hospital Students. By T. Wharton Jones, F.R.S., &c., &c. London: Churchill, 1857. 12mo, pp. 131.

The Ophthalmia of Ireland: its Nature, Effects, and Treatment. By John Williams, A.B., T.C.D., &c., &c., Surgeon to the Cork Eye Dispensary. Dublin: Fannin, 1857. Pamphlet, pp. 44.

The first of these little works on ophthalmic subjects is, what it professes to be, a mere catechism of the medicine and surgery of the eye and ear, and will be found useful as a guide and help for the student of ophthalmic and aural science. In the form of concise questions and answers, it embodies the principal practical matters appertaining to eye and ear disease, and very clearly defines the many often perplexing terms which have relation to these affections. It should be in the hands of every hospital student, and we most strongly recommend the observations contained in the preface to the work to the serious consideration of every one who undertakes the solemn responsibilities of the healing art. We have repeatedly expressed similar sentiments in this Journal, and we now most cordially endorse every one of those so ably put forward by the distinguished author in the following words:—

"In general practice, cases of disease of the eye are always occurring, and many of them are so dangerous to the sight that the most prompt treatment, including the observance of numerous special details, is necessary to save the patient from blindness. It is not by looking on occasionally at operations, that a student will gain the knowledge of the diagnosis and treatment of the diseases of the eye, necessary to qualify him for practice; he must watch case after case, and that throughout their whole course. Unless a student takes the trouble thus to make himself familiar by observation with the various eye diseases, as they present themselves, and the effects of remedies on them, he will, when he comes to practise for himself, run the risk of allowing a case of ophthalmia neonatorum to run on to the destruction of the cornea; or, by failing to distinguish a case of iritis, which requires active general treatment, from one of ca-

tarrhal ophthalmia, in which local applications are so necessary, he will probably find, after a great expenditure of eye-water, drops, and ointment, the inflammation not only not cured, but the sight of his patient seriously injured by obstruction of the pupil with lymph. By such disastrous experience the young practitioner will, when it is too late, be made sensible of the error he has committed in neglecting the opportunities for the study of eye diseases which his hospital afforded.

"Let not the student suppose that, because he may have been diligent in acquiring a knowledge of other departments of medicine and surgery, he is at once competent to undertake the management of any of the diseases of the eye, without having previously paid any special attention to the subject. Although the elementary forms of disease be the same in all organs, still, in consequence of the different purposes the different organs may have to serve in the economy, their parallel or corresponding diseases may prove to be very different in relative importance and ulterior effects. That the relative importance and ulterior effects of the elementary forms of disease in the eyes must be quite peculiar, will be at once evident, if we call to mind the nature of these organs in respect to particular structure and function.

"It must, then, be by special clinical observation and study alone that the student can acquire that tact and acquaintance with detail by which he will be enabled to make successful application of his general knowledge in particular cases of ophthalmic disease."

The preceding observations should be attentively read and laid to heart by every one who enters upon general medical practice, and who desires to perform his responsible duties faithfully to the public, and with credit to himself.

We now come to notice briefly the *brochure* of Dr. Williams on the "Ophthalmia of Ireland." This little work, it will be seen, treats of a disease which has frequently been referred to in the pages of this Journal. Dr. Williams regards it—

"As a conjunctival inflammation, differing in degree only from the ordinary catarrhal form, which, from its prevalence among the peasantry of Ireland, but particularly the destitute inmates of workhouses, daily forces itself on our attention, and which, from the peculiar effects by which it is almost universally characterized in those classes, he has named '*the Ophthalmia of Ireland.*'"

Again, he says:—

"Exposure to cold may be regarded as a *proximate* cause, and, from close observation, I have concluded, that want of *covering for the feet*, which too frequently is a secondary consideration, and in many cases is regarded rather an incumbrance, operates more powerfully in the production of this disease than any other exciting cause;

and I feel convinced that, if the guardians of the poor adopted adequate measures to obviate this *evil*, the number of inmates of workhouses who are, from the effects of chronic ophthalmia, left a burthen upon their country, would be speedily and materially reduced."

In our opinion, there are many other causes besides "want of covering for the feet" which excite the disease in question, and there are greater "evils" to be remedied, not only in our workhouses, but in our general social system, than this barefooted misfortune! We fear that want of wholesome food, inattention to cleanliness, exposure to the foul air of smoky cribs, and residing in unsewered localities and in badly ventilated dwellings, are "evils" greater than naked feet; and that some of the same causes, combined with over-crowding our workhouses, contribute, more than the want of shoes and stockings, to produce the large amount of eye disease, especially chronic conjunctivitis, which prevails in Ireland, or, we may say, wherever the lower orders of the Irish "most do congregate." The author, we must admit, has not overlooked these other exciting causes; but he seems to us to lay rather much stress upon the "*evil*" of bare feet.

Dr. Williams has evidently seen a good deal of this prevalent affection, and pretty accurately describes the various forms of conjunctival inflammation by which it is usually preceded; while he gives a very vivid picture of the disease in its worst form, when the conjunctiva has become hypertrophied and almost completely changed in structure, and when the cornea has become thickened and opaque.

The treatment which he recommends is the usual routine laid down in "the books," and is judicious enough, only that he seems to have forgotten the most essential, namely, strict attention to those sanitary observances without which every remedy—internal drug or local application—will fail; the eye douche, too, he does not mention, though there cannot be any question that its use, either with cold or tepid water, or with some sedative or stimulating collyrium, such as the case may require, is of vast advantage in almost every form of chronic disease of the conjunctiva and cornea.

We cannot conclude our observations on Dr. Williams' pamphlet without expressing our surprise that the author—an Irishman practising in Ireland—should have altogether omitted to mention the names or refer to the writings of the two distinguished oculists of our city, Dr. Jacob and Mr. Wilde, who, as he must be aware, have frequently written on the very subject of which he treats. He surely cannot expect that by ignoring all they have contributed to ophthalmological science, he is qua-

lifying himself to take the place of either. Will he also plead ignorance of the writings of Mr. Browne, of Belfast, which have so frequently appeared in our pages? While such disingenuousness, on the part of the author, demands our severe reprehension, our critical candour enables us to recommend his essay to the notice of our brethren, and to the serious attention of the medical student, who, in its pages, will find much useful information regarding a prevalent and intractable disease.

On the Urinary Secretion of Fishes; with some Remarks on this Secretion in other Classes of Animals. By JOHN DAVY, M. D., F. R. SS. L. and E., &c. Reprinted from the Transactions of the Royal Society of Edinburgh. Edinburgh: Neill and Co. 1857. 4to, pp. 6.

WHEN we first read the above title it struck us that it was particularly fitting that the brother of the illustrious author of "Salmonia" should turn his attention to the history of the finny tribe; Dr. Davy's high character in the scientific world does not, however, rest on any accidental circumstance of family or kindred, and we gladly receive each fresh addition to our knowledge emanating from his pen, as the contribution of a philosophic and deep-thinking mind.

In the interesting memoir before us, Dr. Davy has entered on a subject which, with him, we believe to be as yet almost untouched,—the only observation on it we recollect to have seen being a statement by Berzelius, that the urine of fishes contains uric acid[a]. That this should be so, in the present day of active inquiry, we also are inclined to attribute to the causes he assigns,—"the nature of the element inhabited, the peculiarities of the urinary organs, the difficulty of collecting the matter voided, and its having no well-marked distinctive qualities obvious to the senses."

The fishes examined by Dr. Davy in search of their urinary secretion were,—"the salmon, sea-trout, charr, common trout, pike, and perch; the skate, ling, conger, cod, pollack, haddock, turbot, bream, and mackerel."

"Of these, the salmonidæ, pike, perch, ling, and ray, have a small urinary bladder, and, in all but the last, communicating directly with the kidneys. In the last mentioned, the ray, the com-

[a] Traité de Chimie, par J. J. Berzelius, traduit par Me. Esslinger. Paris: Firmin Didot, Frères, 1833. Tom. vii. p. 393.

munication appears to be indirect, after the manner observable in some of the batrachians, in which the ureters terminate in the cloaca.

"The other fishes named seem to be destitute of a urinary bladder, or, if possessed of one, it was so small as to have escaped observation. The ureter in these, when distinct, was found to terminate near the verge of the anal aperture: in several instances it was so large and dilated as to serve the place of a bladder."

In the urinary bladder of the salmonidæ, so small as to be little more than rudimentary, Dr. Davy never discovered any fluid collected. That of the perch is larger, and internally plicated and spongy, and has been found to contain a fluid. The viscus in the pike is very small; in the ling it is comparatively large: from the bladder of one of this species—a fish of four feet in length—about a drachm of nearly colourless fluid was obtained.

Of the fishes destitute of a urinary bladder, the ureter, in the instance of the haddock, of the cod, of the pollack, and of the turbot, was found so capacious that it might answer the purpose of a receptacle or bladder. In each its inner surface was wet; but only in one, that of the turbot, was there any fluid collected.

From the observations he has made, including the chemical and microscopic examination of such portions of the secretion as he has been able to procure, Dr. Davy, with due philosophic caution, suggests the following conclusions:—1st. That the urinary secretion of fishes is very limited as to quantity. 2ndly. That it is commonly liquid. 3rdly. That the nitrogenous compound eliminated is variable, either urea or a lithate (the latter, probably, very seldom), or some nearly allied compound of azote.

To the foregoing observations on fishes, Dr. Davy appends some general remarks on the renal secretion in other classes of animals. He shows that while the great object of the function of the kidneys is the removal of the excess of nitrogen from the system, the nature of the secretion presents remarkable differences, which "seem to be regulated more by the structure of the urinary apparatus, or secerning vessels, than by any other circumstance:" thus in the mammalia, provided with an ample urinary bladder, the normal secretion is seen to be entirely liquid, and the principal ingredient, so far as it has yet been determined, always soluble urea; while in birds, on the contrary, and in those reptiles which, like them, are destitute of a urinary bladder—viz., snakes and lizards—invariably the secretion is

chiefly solid,—a soft, plastic solid, owing its consistence to admixture with water, and composed principally of lithate of ammonia and lithic acid.

Dr. Davy concludes his very valuable and interesting paper with a comparison between the functions of the kidneys and the lungs; the former organs being the depurators of nitrogen, as much as the latter are of carbon.

"How strongly is this exemplified in birds;—of high temperature, consuming much atmospheric air, evolving much carbonic acid; their urinary secretion also is remarkably abundant, and abounding in nitrogen. And in other classes of animals, such as insects in their several stages, such as serpents and lizards, and the hybernating ones of different classes, whether active or torpid, a like accordance, though perhaps not so strongly shown, is yet clearly observable.

"Reasoning hence, guided by analogy, might it not be expected that in the instance of fishes, inasmuch as their temperature is low, and the quantity of carbonic acid evolved small, their urinary secretion also would be proportionally small? And, granted that it is so, as the results of the experiments described would seem to indicate, does it not lead to another conclusion, viz., that subsisting, with few exceptions, exclusively on animal food, this their food, under the influence of a high digestive power, is almost entirely assimilated, and that no more is expended on the urinary secretion than is requisite to balance the small amount consumed in carrying on the aërating process? And if this be admitted, does it not help to explain some of their peculiarities,—their remarkable rapidity of growth when supplied with abundance of food, their little waste of substance when sparingly supplied, and their long endurance without loss of life, under a total or nearly total privation of aliment.

"The history of the salmon and its congeners, which of late years has been so carefully and successfully studied, might be adduced in illustration, exemplifying—1st. The great activity and power of the organs carrying on the digestive functions,—the stomach itself of the captured fish, with the parietes adjoining, being found more or less dissolved by the action of the gastric juice in the short space of a few hours, and being always found empty in the migrating fish; 2ndly. The extraordinary increase in weight during the short sojourn of the young salmon in the sea, when, without stint of food, it passes from the smolt stage of growth to that of the grilse; and 3rdly. The comparatively very slow growth of the young salmon in its parr stage during the months of winter and early spring, when its food is scarce."

We need scarcely apologize for the length of the quotations which we have made from Dr. Davy's paper; the very interesting and philosophic character of his remarks has insensibly induced us to extend them much beyond the limits we originally intended to have observed.

Phantasmata; or, Illusions and Fanaticisms of Protean Forms productive of great Evils. By R. R. Madden, F.R.C.S. Eng., M.R.I.A., &c. London: T. C. Newby. 1857. 2 vols. 8vo, pp. 504 and 508.

These volumes afford ample proof of their author's industry and research. Though we cannot subscribe to all the opinions which he has advanced, opinions involving points of faith in which we do not acquiesce, we still desire to record our high appreciation of those curious and interesting details which he offers. The subject is one not altogether new, having already, in the works of the Sydenham Society, the former numbers of the Psychological Journal, and from the pens of other writers, found exposition. For Mr. Madden has been reserved the labour of giving the most complete *resumè* of those several phenomena which constitute so many pages of sad and curious interest in the intellectual history of men, while offering to those interested in psychological studies minute accounts of their several phases, distinguished alike for the close study they evidence, and the ability with which they are arranged.

Mr. Madden, while entering with minuteness into the history of the various forms of mental disturbance, at times becomes so imbued with his subject that we almost fear he departs from that strict psychological estimate of those psycho-physical phenomena which mark the prevalence of epidemic mental disease, and is disposed to regard as realities the statements of excited minds, who with more than usual gravity detail either their inspirations or aspirations.

It would be a matter of deep interest to follow our learned author throughout his researches, which in the first volume especially are directed to investigations of epidemic forms of mental disease. We will, while reserving for a future occasion more extended observations on this subject, confine our notice, for the present, to the opinions advanced respecting Jeanne d'Arc, who fell a victim to the prevailing belief of the fifteenth century in demon-worship.

We would willingly enter into a full consideration of such circumstances in the relative position of France and England as we conceive prepared the minds of both countries for that influence which Jeanne d'Arc exercised; particularly as Mr. Madden has countenanced, if not advocated, doctrines which, without disparagement to the reasoning displayed nor the premises he adopts are, we would submit, capable of being superseded by explanations quite as tenable, and far more satisfac-

tory as being based on matters of fact rather than of opinion. We feel, however, that it would be foreign to the legitimate scope of our pages to discuss questions of purely historical interest, and shall therefore confine our notice to the following observations, from which we infer that Mr. Madden is in favour of the sentiment entertained, and advocated, as he assures us, by many writers, who affirm that Joan of Arc was possessed of supernatural powers, and must therefore be regarded as a special agent selected by Providence for the accomplishment of particular designs:—

"Previously to her captivity," writes Mr. Madden, "I am not aware of any morbid peculiarity in her mental constitution which should lead to the conclusion that her agency might not have been within the scope of Divine Providence, for the accomplishment of a design whose aim was the deliverance of a nation from a foreign enemy, and the humiliation of its oppressors.

"To come to this conclusion, it is not necessary to believe that Jeanne d'Arc had daily intercourse with saints and angels. It is only essential to believe in the justice of that design, and being of such a kind that it appeared to have been promoted by her, that her motives and actions corresponded to the exalted mission presumed to be assigned to her: that she believed in it; that the purity of her life was a guarantee for her integrity; and, finally, that she performed acts which served to attest her pretensions and powers not ordinarily given to persons of her age, sex, and condition."

Having quoted a very remarkable passage relating to Jeanne d'Arc in Grafton's Chronicle of the History of England, Mr. Madden proceeds:—

"It is impossible to read the passage that has been just quoted, and other passages to be found in the same old Chronicle, descriptive of the mighty efforts made by the Duke of Bedford to maintain the English dominion in France; and also of the pride and hauteur of the imperious Regent, the Duke of Bedford, without feeling there was nothing irreconcilable with God's Providence in the way of beating down that unbounded pride; of humbling, too, and putting an end to that insensate ambition and lust of dominion which prevailed in the English Court, and of rescuing France from the calamity that seemed then imminent, of losing its nationality, and dwindling into a province governed by a foreign power; and all this through the instrumentality of an humble, illiterate, low-born peasant-girl, with nothing in the eyes of the world to recommend her, being poor and living in obscurity, and remarkable only in a small circle, in a remote hamlet, for being good and pious, pure and simple.

"Agents of this sort have been used by Divine Providence for great purposes in all times, and in many regions of our globe; and

if we presume to inquire how it comes to pass that Providence condescends to choose its instruments among the poor and humble, the weak and unlearned, to overcome the proud and exalted, the strong and the wise in the wisdom of this world, we can only come to one conclusion, that the policy of God is not conformable to the policy of man, and that many things are consistent with the teaching of the Holy Scriptures which are not in accordance with our notions of the nature of heroic acts and human agencies. With the several Scripture records of inspiration given to women for the accomplishment of great and good designs, the history and mystery of the visions of Jeanne d'Arc may possibly be found to be in nowise inconsistent."

The passage quoted, as affording grounds for the above observations, runs as follows:—

"'This witch or manly woman, called the Mayde of God, the Frenchmen greatly extolled, alleging that by her Orleance was vitayled: by her King Charles was sacred at Reynes, and that by her the English men were often times put back and overthrowne. O Lorde, what disprayse is this to the nobilitie of France? What blot is this to the French nation? What more rebuke can be imputed to a renowned nation than to affirm, write, and confesse that all these notable victories and honourable conquests, that neither the King with his power, nor the nobilitie with their valaintness, nor the counsayle with their wit, and the commonaltie with their strength could compasse or obtain, were gotton and achieved by a shepherdes daughter, a chamberlein in a hostrie, and a beggars brat,'" &c.

We submit that there is nothing in these observations to warrant the assumption of supernatural influence.

At a period when the powers of France had been chilled by a long course of adverse fortune consequent on political immorality and ministerial incapacity; when, subdued but not conquered, the spirit of the nation, while borne down by iniquitous and impolitic English wars, still afforded evidence that, though crushed, it was far from being extinguished; when aggression from abroad, and profligate degeneracy at home, rendered France alike the spoil of her enemies and the prey of her nobles: governed by a prince who during the calamitous morning of his reign shrank from fronting the storm and strove to forget himself in pleasure, a prince who, though brave, was never seen in war, who, though intelligent, was completely governed by flatterers; with an army exhausted by civil and foreign war, and a treasury incompetent to defray the expenses even of the small force which defended the wreck of his monarchy,—France found a saviour in the enthusiasm of

a patriot maid, who, filled with glorious conceptions respecting her country, lent new spirit to the flagging energies of its people, and at length aroused them to a vigorous and successful struggle against aggressors who threatened destruction to their nationality, and to themselves that exaggeration of wretchedness which marked especially the progress of the English arms.

For the means by which she accomplished this happy result, and the special circumstances which, while giving confidence to France, conspired to enfeeble with a superstitious awe the sinews of the English, we must refer to the elaborate and very minute account the volumes before us supply. Their readers will, we trust, hesitate ere adopting, except *grano salis*, those statements which, as mere matters of record, bear evidence of the superstitions of the times, and illustrate forcibly that then, as now, the disposition prevailed quite as strongly to note as something remarkable incidents which, at the time, attracted no notice, and were not invested with unusual significance until some subsequent success set the ancients declaring they always knew than Joan of Arc would prove "a wonderful woman."

It is, if we mistake not, an admitted principle in reasoning, to first adopt, as an explanation of doubts, arguments based on premises affording the greatest probabilities, and, while they offer satisfactory solutions, to rest satisfied that we are rightly informed. True philosophy delights not in mystery. The more extensive our knowledge, the wider the sphere of our information, the less disposed we become to seek for miraculous interference as the agent producing phenomena, be they social or physical, which, even in the existing state of our information, will occasionally seem to be inexplicable. The visions of yesterday constitute the realities of to-day. The enigmas of to-day may become the common-places of to-morrow. There can assuredly be no just ground for the supposition that Joan of Arc was specially inspired, unless we fail in explaining the remarkable incidents in her life by arguments explicable to our reason, and see in the circumstances of her times events of such a nature as admit of a no less astounding solution.

It is in accordance with the doctrines of our Christian faith in all events to recognise an overruling Hand,—to believe that even a sparrow cannot fall without the knowledge of its Maker. Such confidence in the all-seeing and all-powerful will of Heaven is perfectly distinct from the sentiment which invests with supernatural agency each one who in a remarkable degree

excels his fellows, and finds in their glory or their shame evidence of a predestined career.

Joan of Arc we believe to have been one of those enthusiastic visionaries, who, reflecting on the wrongs of her country, and sustained by a sense of vivid patriotism, suffered her imagination to suggest to her judgment, and her judgment to direct her conduct, for the carrying out of designs whose success was mainly dependent on the energy displayed in their execution. We presume not to argue with Providence; but we would ask, what was there in the mutual relations of France and England to demand a messenger from Heaven or a delegate on earth? Nothing more than that which is evidenced in those several unjust, oppressive, and sanguinary wars which have, through all ages, carried fire and the sword amongst men, destroying empires and razing cities.

Joan of Arc, in performing acts not ordinarily accomplished by persons of her age, sex, and condition, is, most assuredly, not singular. Though years are presumed to bring experience, experience must not be considered as essential for success, further than, in its application to known powers, it enables a just estimate to be formed of their mutual relations. In matters of an indefinite character, when exact science fails to establish rules, that ability which commands success anticipates experiment, and so founds experience. Were it otherwise, we should be without those remarkable proofs of what has been accomplished by many at such an age as precludes the possibility of their minds being schooled by practical lessons, which, according to some, constitute the sole safeguards against failure or defeat. That the greatest feats of genius have been accomplished by those whose years had scarce reached manhood, is a fact too notorious to admit of being questioned. That women have at times led the van in matters military, scientific, and diplomatic, has been abundantly evidenced from the day that a woman rallied the energies of Britain, and vanquished the hitherto victorious arms of Rome, to this, our time, when the terrors of a Crimean campaign found one with gentle hand to soothe the fevered brow, and gentler words to glad the warrior's heart. Review the progress and examine the present position of science, sculpture, painting, literature, and those more refined arts, nay, even severer studies, in which men would fain assume preeminence, and we ask, are there no female names which stand in proud positions? What has condition to do with success beyond affording opportunity? It gives not ability. This fact is patent!

The merit is, not to be dropped on Fortune's hill, but to mount it! Age, sex, and condition are, in themselves, considered apart, no reasons why Joan of Arc should not have accomplished what she regarded as her mission. Taken together, they acquire no additional force! The success of her enterprise, the sagacity of her counsels, the energy of her actions, the boldness of her designs, the influence of her example, are not without corresponding results in recent times. We look to the progress of Clive, the career of Washington, the success of Napoleon, the glory of Wellington, and find that now, as then, great and glorious results assuredly follow when the will to do and the soul to dare are stimulated by a sense of national necessity, supported by manly hearts, whose brightest visions are the glories of their country, and proudest trophies honourable scars received in her service.

That a writer of Mr. Madden's known ability, who, throughout the volume before us, displays such evidences of superior powers of mind, should advocate the inspiration of Joan of Arc, we regard as not the least curious revelation which his pages offer. We would gladly prolong the discussion, and reiterate arguments derivable from the character of the advice Joan offered, the instances of her success and failure, the spirit displayed in her trial and condemnation, the superstition manifested in her examination and execution, and the subsequent progress of the country it is asserted she was inspired to save, did we believe that any profitable results would follow. We trust that few of enlightened and refined minds will be found to echo the opinion, that agencies of a supernatural nature are permitted to influence the conduct of our affairs, especially when their condition is explicable by incompetency or negligence. There is, we regret much to observe, even in this our day, abundant evidence that men of strong minds are not free from such sentiments. The murderer, reeking with his victim's blood, rests secure while clairvoyance trifles with justice; sage men bow with reverence to the charlatanic suggestions of mesmerism; science revolts from the prostitution of her resources to promote the success of unblushing quackery; while men of reason confer together, and wonder that, in this the nineteenth century, witchcraft again revives to rob the simple of their slender means, or supply the criminal with instruments of wrong.

For a complete account of the epidemic monomania and demonopathy, in the fifteenth, sixteenth, and seventeenth centuries, which visited several convents, we refer with confidence to the pages now under review. Those curious in such mat-

ters will there find ample details. Medical men who have studied the sympathies of the female constitution, and examine these details with a psychological scrutiny, will without much difficulty offer explanations for their cause as well as progress.

The following sentiments will, we are satisfied, while enlisting our sympathy, find a response from those familiar with the homesteads of our poor. Speaking of sisters of charity and their labours, Mr. Madden writes,—

"Other results may be expected from the stirring instincts of their heroic charity, of a piety that manifests itself in compassion for poverty and suffering, from the performance of the highest duty to humanity, with the purest intentions and the holiest feelings of devotion to God's service, in all humility and simplicity of heart and mind; from works of mercy and continual self-sacrifice, wherever their services are called for,—no matter how loathsome may be the horrors, imminent the dangers, and painful or repulsive the lineaments of sin or sorrow they have to encounter at the bed-side of the sick, and the dying, and of the suffering of all categories, in the extremities of human misery in its direst circumstances of destitution, squalor, and all surrounding sources of contamination."

We are further informed, that,—

"Forty of the sisters who devoted themselves to the service of the sick and the wounded of the allied armies in the East, in the late war, perished in the discharge of their duties, either in the hospitals of Varna and Scutari, or in the Crimea, or from the effects of the discharge of those duties, within a few months after their return to Europe; the victims of their incessant labours in that campaign."

Peace be with them, and hallowed be their memories, say we; may the soil lie gently on their graves!

Rapport à la Société de Chirurgie sur l'Eléphantiasis du Scrotum. Par M. Hte. Bon. Larrey. Paris: Victor Masson. 1856. 4to, pp. 172.

It appears that in the year 1855 M. Larrey presented to the Society of Surgery in Paris a Memoir from the pen of their "celebrated confrère," Dr. Clot Bey, "On the Elephantiasis of the Arabs, particularly that which is developed in the Scrotum; with general considerations on Lepra and Elephantiasis."

On the receipt of this communication the Society appointed a Commission, consisting of MM. Monod, Guersant, and Larrey,

to inquire into and report upon the work. The volume now before us is the result of the labours of the Commission, the task of drawing up and editing the Report having devolved upon M. Larrey.

The reporter premises that, in the year 1830, M. Clot Bey had published his first observations on Elephantiasis Arabum, accompanied by practical remarks and illustrated with engravings of the disease; also that, in about four years afterwards, he added some new reflections. The Commission have considered it necessary that this statement should be made as preliminary to the analysis of the actual memoir, in order to insure to Dr. Clot Bey the merit of a priority relatively to other publications than his own on the same subject. He had subsequently confirmed, by personal observations in Egypt, those which Baron Larrey had collected there for the first time during the memorable expedition of General Buonaparte. To these and such like *souvenirs* the reporter attaches a particular interest.

It were difficult to give our readers anything like an epitome of the facts and observations abounding in this valuable monograph; for we have throughout the Report a complete digest of the observations and opinions of all the medical writers who have studied the disease in question in those countries in which it is endemic. The Report commences, after a few preliminary remarks, with a historical account of elephantiasis scroti and its endemicity; after which we find, successively described, the causes, symptoms, complications, diagnosis and prognosis, terminations, pathological anatomy, and treatment of this singular malady. In turning over the leaves of this voluminous Report we meet with evidences of the most laborious research on the part of M. Larrey, who has evidently bestowed a good deal of care upon the arrangement of the matter; but while he has skilfully disposed the results of the numerous researches he must have made in order to study his subject fully, as well in its *ensemble* as in its details, he has taken care to give a due degree of prominence in every case to the opinions entertained by the author of the memoir.

Dr. Clot Bey, like Larrey and some others, does not admit elephantiasis to be a simple manifestation or a mere variety of lepra. He attributes the latter to a general condition of the system, a sort of idiosyncrasy, while he ascribes the former to a peculiar morbid state which exists locally, is sufficiently common in certain countries, but arises from external causes. With regard to the seat of the disease, according to his observations, true tubercular lepra attacks generally the face and the

upper extremities, while elephantiasis is observed almost exclusively in the inferior extremities and the scrotum; sometimes, however, it affects the labia, and more rarely the mammary glands. The two diseases differ also in their general aspect, lepra being characterized by small tubercles developed in the substance of the skin, prominent externally, degenerating into scaly ulcers, which gradually extend in breadth and depth, denuding the bones and affecting them with caries and necrosis, also giving rise to sphacelation of the fingers and toes. The principal phenomena of elephantiasis are described as tumefaction, hypertrophy, œdema, and sometimes inflammation of the affected part, without the production of isolated tubercles, although the integuments in some cases are covered with scaly crusts and superficial ulcerations. The latter affection does not present those morbid conditions of the general system which usually attend lepra, such as stupor, alteration of voice, fetor of breath, general feverishness, with disturbed digestion and progressive emaciation.

The author has not been able in a single instance to examine a body in case of death by elephantiasis; he has, however, seen one case of a person who had sunk from the effects of some other affection while labouring under the disease in question. This case is described as having presented a hypertrophied condition of the subcutaneous areolar tissue (which, according to the author, is the essential seat of the disease), accompanied by infiltration of serum.

In the morbid state described above, the lymphatic system did not appear to have taken the least part, and similar observations are reported regarding several tumours of considerable volume which had been extirpated, in all of which a careful examination of the lymphatics failed to detect an extension of the disease. This fact, in the opinion of the author, establishes a formal contradiction to the opinion advanced by Alard in his book ("Histoire d'une Maladie particulière du système lymphatique:" 1806), in which he considers elephantiasis as an inherent affection of the lymphatic system. "And yet," adds M. Clot Bey, "this opinion has been reiterated by most physicians who have written on this subject."

Regarding the appearances in the leprous form of disease, this observer had occasion to make several post-mortem examinations, and he found a "complete degeneration of the skin and areolar tissue, with ramollissement of the tubercles and divers lesions of the lymphatic system, as well as of the organs of the digestive apparatus." He never met with lepra and elephantiasis simultaneously in the same individual; and this

existence of one disease, to the exclusion of the other is, in his opinion, a further argument in favour of their non-identity.

The reporter speaks in favourable terms of the general issue of operations practised for the removal of elephantiasis. He says:—"Notwithstanding the vast incisions for the ablation of the tissues, these operations usually succeed, and cicatrization proceeds with tolerable rapidity; whilst this is by no means the case in regard to the leprous, amongst whom a special diathesis, like that of cancer, tends to a reproduction of the mischief, to such a degree that a single wound or excoriation soon assumes the character of a gnawing ulcer."

To the Report itself we must now refer those of our readers who are interested in the study of this unsightly affection. believing, as we do, that in this work they will find a full and faithful representation of the experience of one whose long sojourn in Egypt has given him abundant opportunities of practically studying the malady in question under its diverse forms, and in all its degrees.

Du Microscope au point de Vue de ses applications à la Connaissance et au Traitement des Maladies Chirurgicales. Par le DR. L. SAUREL. Paris: Baillière. 1857. 8vo, pp. 148.

THE extreme attention which has latterly been bestowed on microscopic investigations has been confessedly sufficient to create a new era, at least, in several departments of the medical profession. A certain acquaintance with its powers of revelation has now become more or less necessary to the professors of our art, and in many instances both the physician and surgeon have had ample reason to feel grateful for the assistance afforded by its employment in those cases where a proper diagnosis would otherwise have been beset with serious difficulty, or, to speak more properly, would have been under ordinary circumstances almost an impossibility. Still, however, whilst thankfully acknowledging the indisputable aid which we have so often derived from its use, it would be an absurdity to maintain that we can in all instances implicitly rely on the indications drawn from it,—a fact which Dr. Saurel has taken much pains to impress upon us most emphatically; while, to attach still greater weight to his own sentiments, he has yet further corroborated the views thus laid down by an extract from the writings of the celebrated Donné, whose ideas on this subject, from his long experience, must always be such as to be received with a proper amount of consideration and respect. Accord-

ingly, after having enumerated the several and varied duties which the microcsope has been called on to perform, with the object of elucidating obscurities, oftentimes the most opposite in their character, he thus proceeds to observe:—

"This exaggeration cannot be of long duration, and the most convinced and skilful advocates of the microscope are amongst the first to acknowledge that it constitutes a mode of study calculated only to aid those of which we are already in possession. It is in this sense that a philosopher who has been one of the first to introduce a taste for this instrument into France expresses himself—

"'Without desiring, he remarks, to restrict to an extent too great the field of microscopic observation, it is right never to forget that the microscope is a species of reagent fitted to define substances which by their nature or quantity elude the process of chemical analysis. This idea, taken in conjunction with the employment of this instrument, is useful in confining observers to a proper path.'"

To the absolute justice of those views, British microscopists have long since most fully subscribed, and by them the instrument has been almost invariably employed either simply to confirm preconceived opinions, or, in cases of more than ordinary obscurity, to afford some casual hint, by which, in connexion with other existing indications, a clue may be obtained capable of resolving a doubt or revealing a mode on which may be based a plan of treatment rationally adapted to effect the object they may be desirous of accomplishing. Still, however, it must be allowed that there are very many who, on first devoting themselves to this particular study, have indulged in no measured day-dreams respecting the wonderful discoveries that were yet to be achieved as the consequence of their miraculous exertions, but who, after no very lengthened period, have been constrained to acknowledge that the sanguine expectations they once entertained had cooled down in a remarkable degree, on discovering that the results which they obtained as the reward of hours devoted to patient and persevering inquiry were not always of a character so distinctive and decided as would justify them, without much modification, in establishing a tenable theory, which might, under all circumstances, and without the apprehension of contradiction, appeal for its support to the reasoning faculties of the many cavillers with which, unfortunately for their class, the world at large is at present so thickly studded. It would be ridiculous to assert that there are not certain limits beyond which the prying investigation of the microscope cannot possi-

bly extend; and we are decidedly of opinion that Dr. Saurel has conferred no small boon on the profession in thus endeavouring to remove many of the delusions with which it has been, we regret to say, very generally invested, and in accomplishing this object he has displayed a vast amount of clever and ingenious argument, combined with still larger scope of extensive and varied reading. In conclusion, we feel no hesitation in stating that the little work before us must exercise an unquestionable influence in encouraging and promoting a more assiduous and better directed application in the laudable effort of striving to develop on a broader and really trustworthy scale the powers of an instrument as yet only in its infancy, and comparatively but little understood, and for these very reasons its deductions being always so liable to be impugned, doubted, or flatly contradicted.

A Treatise on Cancer and its Treatment. By J. WELDON FELL, M.D., &c. London: Churchill. 1857. 8vo, pp. 95.

IT would not accord with our ideas of professional justice did we allow the various notices of Dr. Fell's essay, which have appeared in the medical journals of England, to influence our judgment in arriving at a just decision in relation to the much-vexed question of medical ethics involved by the reservation of *secret remedies* or *cancer specifics*. Notwithstanding the all-engrossing nature of the subject, which has already done good service to the state of journalism, in the form of reviews, lectures, and correspondence, we must express our conviction that these contributions are certainly more voluminous and exhaustive than instructive to the profession or useful to the public. It is, therefore, with regret that our duty compels us to add an additional notice to this already over-discussed subject, and, although we may arrive at the same conclusion as our literary collaborateurs, let us, however, assure Dr. Fell that we approach the examination of his special essay without a shadow of prejudice, or any other feeling save that of consideration and even indulgence towards one who claims, as a stranger to our country, if not leniency, at least the measure of even-handed justice.

The author of the essay before us, a graduate of the University of New York, being in possession of a remedy which he believes capable of curing cancer, determined to commence the special treatment of this malady in London, preserving as a secret the composition of the particular medicaments em-

ployed; still he allowed, nay invited, any members of the profession to visit his consulting rooms, and observe the progress of his treatment, a permission which it seems that many availed themselves of. At this juncture the Board of Governors of the Middlesex Hospital made overtures to Dr. Fell, in order that his remedy might receive a fair trial at that institution,—the medical staff having acquiesced in an arrangement to place twenty-five patients under his care, on the following conditions:—

"The undersigned, being the Surgical Staff of the Middlesex Hospital, have much pleasure in complying with Dr. Fell's request that they should furnish him with a report upon his treatment of certain cases of cancer under their charge in the Middlesex Hospital.

"They have learned with great satisfaction that Dr. Fell's object in obtaining this report is, that he may embody it in a work now on the eve of publication, in which he intends to disclose the peculiarities of his method of treatment to the profession.

"Before proceeding further, the undersigned consider it due to themselves, to their professional brethren, and to Dr. Fell, to state the general terms upon which, in compliance with the desire of the benevolent founder of the Cancer Establishment of the Middlesex Hospital, the Medical Committee feel it their duty to recommend to the executive authorities, that that gentleman should be allowed to pursue his plan of treatment under their superintendence in the wards.

"The terms were proposed by Dr. Fell, and were to the effect:—

"1st. That Dr. Fell should, *in confidence*, communicate to the Surgical Staff the nature of the remedies employed by him, the method of their preparation, and the mode of using them.

"2nd. That twenty-five cases should be subjected by him to treatment during a period of eight months.

"3rd. That Dr. Fell should pledge himself to publish the full particulars of his system of treatment within a period of six months; and that in case of his failing to do so, that duty should be undertaken by themselves."

Such is the brief history of this essay, which constitutes the first charge in the indictment against the professional conduct of Dr. Fell, and it seems simply to resolve itself into a question of medical ethics, involving not only Dr. Fell, but also the medical staff of the Middlesex Hospital, who have unfortunately associated themselves with the propounder of a secret remedy and the practice of mysterious surgery; still, these gentlemen, far from conceiving that they have violated any moral or professional law, deem that they deserve well of the

public for the liberal act through which the remedial agent employed by Dr. Fell remains no longer in the hands of a single individual, but becomes the property of all. Dr. Fell also had his motives for reservation. He says:—

"1st. Any book or paper written by a stranger, whatever information it might contain, is almost sure to be passed over with neglect.

"2nd. Unless the mode of preparing and applying the remedies is well understood, they might be applied in cases where they would have no beneficial effect, and thereby bring them into disrepute.

"3rd. It often happens that when a remedy or mode of treatment of importance has been introduced by one unknown to the profession, it has been adopted by some leading man, and in many cases the originator is entirely lost sight of.

"After carefully considering all the circumstances, I determined to defer making the remedies and their method of application public, until such time as I should be recognised as the originator of them; and I am glad to say that I think this time has already come, and that I can now publish my plan; for the approbation of many medical gentlemen, and the gratitude of a multitude of cured patients, have now placed it on such a broad basis of facts (and I hold that facts are everything in medicine), that it cannot well be either plagiarized, or the credit due to me disputed."

We need not express our full condemnation of any reservation, even for an hour, of a secret that might, if generally known, not only allay suffering, but possibly avert a greater calamity; for it is one of the fundamental attributes of science that its revelations should extend beyond individual interest, and conduce to the widest benefit of universal man. We must at once ignore the force of Dr. Fell's reasons for retaining the possession of a *supposed successful* remedy, even for a short period, and whilst we merely draw particular attention to the sophistry of those excuses on which he relies in extenuation of his conduct, we must certainly admire the clever appreciation which he has exhibited of the commercial tendencies of the profession in England, as well as the versatility he has displayed in adapting his practice to the peculiar idiosyncrasy of the credulous Briton, whose faith has created Holloway, Morrison, and a host of other household gods, with whom he "loves to bedeck his hearth."

In his essay Dr. Fell states that he cures, *absolutely cures*, cancer by a paste, which causes the enucleation of the tumour, combined with the exhibition of a vegetable internally; and, having given a brief account of the several remedies that are

now or have been used in this malady, he proceeds to the description of his precise mode of treatment, and here is his formula:—

"℞ Sanguinariæ Canadensis, ʒss. vel ʒi.
Chlor. Zinci, ʒss. vel ʒij.
Aquæ, ʒij.
Pulv. Sem. Tritic. Hibern., q. s.
"Mix, and form a paste the consistence of treacle."

If the cancer is "non-ulcerated," the skin is first destroyed by nitric acid; incisions about half an inch apart are then made through the slough, and the paste, spread upon strips of cotton, is inserted into the wounds daily until the tumour entirely disappears. Sometimes he substitutes a strong decoction of the "puccoon," or sanguinaria, instead of the vegetable matter, and thus produces the paste. In small incipient tumours he applies the following ointment:—

"℞ Sulph. Zinci, ʒvi.
Sanguinariæ, ʒij.
Myricæ Ceriferæ, ʒj.
Extr. Opii (aquos.)
Ext. Conii *a a* ʒvi.
Ungt. Cetacei, ʒvi.
"Mist. et fiat ungt."

Alternating it every twelve hours with the following:—

"℞ Iod. Plumbi, ℈j.
Glycerine, ʒj.
Ungt. Cetacei, ʒij.
"Fiat ungt."

These constitute the external means, whilst internally the powder of sanguinaria is exhibited in half-grain doses three times daily, in combination with the sixteenth of a grain of iodide of arsenic and one grain of extract of hemlock. To these are added, as adjuvants, good air, generous diet, and all other means calculated to improve the general health or restore tone to the system. It seems that Dr. Fell discovered the *supposed* virtues of the "puccoon," from traders with the inhabitants of the "far West," who informed him of its efficacy in the removal of tumours when used by the unsophisticated Indians, and his experience led him to combine it with the chloride of zinc to expedite its operation as an escharotic.

That the "sanguinaria" is a medicine of considerable therapeutic agency is undoubtedly the fact; but that it removes cancer and eradicates the special diathesis which causes the

deposit, no prudent surgeon, according to the *present* evidence, will either affirm or deny. *Time alone* can determine the value of the remedy, and, although our past experience of cancer-curing systems would lead us to ignore Dr. Fell's therapeutic agent as useless, except as a mere adjuvant to the chloride of zinc, still, candour and honesty compel us to leave to the result of time the promulgation of that sentence which shall mark him as a human benefactor, or stigmatize his deception as one of the grossest exhibitions of charlatanry that disgrace the age.

God in Disease; or the Manifestations of Design in Morbid Phenomena. By JAMES FOULIS DUNCAN, M.D., Fellow of the Royal College of Physicians in Ireland, Physician to Sir P. Dun's and Simpson's Hospitals. Second Edition. London: Nisbet and Co., 1857. Post 8vo, pp. 323.

IN the eleventh volume of our present series we noticed the first edition of Dr. Duncan's book, commending both the plan and the execution, our only objection being to the title which the author selected. The verdict of both the public and the profession—for a work of its nature legitimately claims the suffrages of both—now confirms our favourable judgment, and the work is republished after having been permitted to be a considerable time out of print, "the greater part having been rewritten, and the remainder carefully revised." We cannot conceive a more difficult subject for a medical writer to touch upon than the attempt to prove a direct evidence of design in the infliction of disease upon man; and therefore we consider the more credit is due to Dr. Duncan for having so completely succeeded in his task. He has well avoided the quicksands of cant and hypocrisy on the one hand, while steering clear of the covered rocks of man's self-justification on the other.

It would be foreign to the purely practical nature—we mean in a professional point of view—of our pages to enter into any particular account of this volume; we shall therefore merely indicate to our readers the substance of its contents. The author first discusses the prevailing opinions as to the cause of disease, and examines the arguments capable of being adduced in support of the different views commonly held. He then reviews the "*nature of design*" intended to be accomplished by disease as it affects society at large and with reference to individuals, and its evidences, the latter being deduced from the proofs afforded by the varieties of disease, from

pain and its modifications, and from other symptoms, such as nausea, vomiting, diarrhœa, sudden hemorrhage, fainting, &c. The processes of preservation, of reparation, and of adaptation are next applied to illustrate the subject, followed up by some observations on the analogies which may be deduced by a comparison between certain disorders and the mode of revelation of spiritual truths. And lastly, before summing up his subject, the conduct of the physician towards his patients is brought in "as illustrating the dealings of God with his creatures."

We have already, on a former occasion, given to Dr. Duncan the credit which he so justly deserves for his attempt to rescue the character of the medical practitioner from the illiberal slur thrown upon our noble profession by those ignorant of its tendencies to develop the best feelings planted by nature in the heart of man. This he does most effectually by the evidence he personally affords in publishing the volume before us, which supplies to the sufferer from disease a connecting link between the duties of the divine and the physician.

Animal Physics; or, the Body and its Functions familiarly explained. By Dionysius Lardner, D. C. L. With 520 Illustrations. London: Walton and Maberly, 1857. Small 8vo, pp. 705.

In the present age of advancement, within our own time so specially marked by the establishment of the system of competitive examination, whereby intellect can be no longer sacrificed at the shrine of interest, scarcely a greater boon could be conferred on the rising generation than the publication of this book. In it, to use the words of the title-page, are "familiarly explained" the animal organization generally, the bones and ligaments, the muscles, the structure of the lower animals, the nervous system, circulation, respiration, digestion, and the senses; the concluding chapter containing an account of "development, maturity, decline, and death." As affording an example of the clearness and simplicity of the author's style, we extract the very last pages of the book:—

"The first period of life in all animals presents the vital functions in a state of extraordinary activity. The increase of magnitude which the body receives is so much the more rapid as the animal is younger, and each year that passes adds proportionally less to the stature than that which preceded it. A child of three years old has already attained about half the total height of the adult.

"The development of the body in bulk is slower than its growth in height. A new-born infant has upon an average about a twentieth of the weight which it will acquire upon attaining its greatest development, which takes place in general for men at forty and for women at fifty.

"During the first year after birth, the increment of weight is about one-tenth of all that it will receive during its subsequent existence; and the increase of weight received from the fifteenth to the twentieth year is even greater than that which is acquired in the first five years.

"On arriving nearly at the limit of his stature, the male passing from youth to manhood undergoes several organic changes. His bones, having acquired a larger proportion of the earthy constituent, have increased strength, his muscles are more developed and powerful. His voice, losing the feminine pitch which characterizes boyhood, becomes almost suddenly much more grave, and his beard is rapidly developed.

"The corresponding changes in the female organism are manifested somewhat earlier, and show themselves by external forms familiar to every eye. The chest becomes enlarged, the shoulders expanded, the pelvis acquires greater width, and the forms of womanhood become conspicuously visible. In temperate climates these changes are manifested at from fourteen to sixteen years of age. In warm climates they take place at from ten to eleven, and in colder countries are postponed to seventeen or eighteen.

"The circulation at the commencement of life has an activity corresponding to that of the other vital functions. The number of arterial pulsations per minute during the first and second month of the infant is 140. In the sixth month it is reduced to 128, in the twelfth to 120; at the close of the second year to 110, and in the adult it descends to from 75 to 80. The same series of changes are manifested in respiration. While the number of respirations of the adult vary from 15 to 18 per minute, those of new-born children range from 30 to 40.

"The infantile respiration develops more heat than that of the adult; and this is rendered obviously necessary, since, independently of other considerations, the surface of the infantile body is greater in proportion to its volume than that of the adult, and consequently subject to a greater degree of cooling by radiation.

"The maternal milk is the proper and exclusive nutriment of the infant for the first six or eight months, about which time a semi-liquid pap, made of wheaten flour or from the crumb of stale bread pulverized, is united with it. Soon after this the food may be varied by a combination with semoline, fecula, the cream of rice, &c. Towards the end of the first year, the food may include broths made from chicken, veal, or beef, at first diluted, and later pure. In fine, at the age of from fifteen to eighteen months, the teeth having issued from the gums, mastication commences, and the infant

being weaned, the transition to solid food is made, but requires to be conducted with great precaution.

"The development of the teeth at the different stages of life, from infancy to adolescence, has been already explained.

"During these changes in the organs of taste and mastication, other modifications take place in the alimentary canal. The stomach takes a more horizontal position, and, as well as the large intestine, acquires increased capacity. The liver and the kidneys increase less rapidly than the other parts of the body, and the urinary bladder descends into the pelvis.

"In coming into the world, the infant can open the eyes, but physiologists consider that it has no sense of vision, and that it is only at the end of some weeks that it begins to be sensible of visible objects. After this, it directs its looks to objects which are most brilliantly illuminated, or which are characterized by the most vivid colours. It then, by slow degrees, begins to distinguish objects around it, but it has been ascertained that a considerable time elapses before it has any idea of distances or magnitude.

"Indeed, this is quite consistent with effects which have been found to result from surgical operations in which sight has been restored to persons blind from infancy. In such cases, it has been stated that the subject of the operation, when first enabled to see, imagined that all the objects which he beheld were in immediate contact with his eyes, and had not the least idea of their relative distances, nor any other notions of their magnitudes or forms than such as were afforded by their profiles. Every object, in short, appeared as a coloured silhouette in close contiguity with the organs of vision.

"The other organs equally undergo a progressive improvement by exercise. During five or six months the infant makes no other vocal sound than inarticulate cries. It begins gradually to be sensible of pleasurable emotions from the contemplation of external objects, which are expressed by its smiles. The cries gradually assume the tone and character of the voice, and are accompanied by incipient efforts at articulation, and towards the close of the first year the more simple monosyllabic words are pronounced.

"The bones, which at the time of birth consist to a great extent of cartilage or gristle, and have no strength sufficient to support the body, receive, in the process of nutrition, a gradual accession of the earthy constituent called the phosphate of lime, which gives them hardness. Contemporaneously with this increase of strength in the bones, there is a proportionate growth and increase of strength in the muscles which move them, and about the close of the first year this strength bears such a relation to the weight of the body, that the child is enabled to support itself on its legs, and by gradual practice acquires the ability to walk.

"Towards the age of five-and-twenty manhood is attained. Growth has usually ceased for some years. The parts of the skeleton

which had been cartilaginous are ossified, and the perfection of solidity and strength in that structure is acquired. The functions of nutrition and assimilation have arrived at a state of equilibrium. The intellectual faculties begin to lose the passionate vivacity of adolescence: the brilliant illusions of youth giving place to the sober maturity of masculine judgment.

"The ardour and often the delicacy and refinement of love is abated from year to year, and a tendency to less elevated sentiments is manifested, which, however, is controlled and more or less suppressed by moral restraint, and still more by the indirect influence of the love of children, which strengthens the conjugal affection.

"Towards sixty, the energies in most cases are gradually decreased. Active life has reached its term. Decline is manifested, and the signs of old age begin to appear.

"At length that epoch comes. The tissues soften. The visage becomes lined and wrinkled. The hairs are sparse and white. The teeth loosen, and, one by one, fall. Digestion is enfeebled, circulation slackened. Ossification invades the vascular system so as to impede assimilation.

"The organs of sense become obtuse, the sight confused, the hearing dull. The movements are slow and difficult. The muscles are less obedient to the nerves; the nerves less obedient to the will. The bones become harder and more brittle. The voice, losing its clearness and purity, is cracked. Year after year decadence progresses, and at length the cessation of the functions of respiration and circulation closes an existence which has ceased to share in the maintenance of the organized world."

We can strongly recommend this volume, perfect in accuracy and arrangement, as affording an excellent, yet strictly popular, view of animal physics,—a subject which we doubt not must now become a part of general education. It is profusely illustrated with well-executed woodcuts, and, from its completeness throughout, we expect to see it adopted as a textbook in all schools of preliminary instruction for those who are to be educated for any of the learned professions.

The Transactions of the American Medical Association, instituted 1847. Vol. IX. Philadelphia: J. K. and O. G. Collins, 1856. 8vo, pp. 907.

We had intended reviewing at some length this volume in our present Number, but the pressure on our space, arising from the great extent of the Original Communications, prevents us from doing more than noticing very briefly some of its contents. Like the preceding volumes of these important Transactions, it contains an account of the annual meeting which was held

in the city of Detroit, Michigan, on the 11th May, 1856, the President's Address, a Prize Essay on the Arterial Circulation, and nineteen Reports from the Committees of the Association, ten of which are on some important disease, or subject immediately connected with the practice of medicine or surgery. Of these we would especially notice as worthy of commendation the second and concluding part of one on "Deformities after Fractures," by F. H. Hamilton, which occupies 164 pages, and is profusely illustrated, and another on "Hydrophobia," which extends to 104 pages, and constitutes the most complete history of this fell disease with which we are acquainted. There are two Reports, however, in the volume which we regard as demanding the severest reprehension from medical writers on this side of the Atlantic, and the condemnation of every honest man of every country,—one is from the pen of Dr. Gross, "On the Causes which impede the progress of American Medical Literature," and the other from the Committee on "Medical Literature," signed by R. J. Breckinridge, J. B. Flint, and D. L. M'Gugin; in both of them the wholesale piratical robberies of British medical works are defended on the selfish principle which, we grieve to say, characterizes too many of the sayings and doings of the inhabitants of the United States,—*Dishonesty is the best policy, provided only it advances our own interests.* But personally we have suffered so much from the dishonest acts of American publishers, that we cannot trust ourselves to dwell longer on the grievance.

Öfversigt af Otiatrikens historia och närvarande tillstånd; Tal hållet vid Svenska Läkare-sällskapets allmänna årssammankomst d. 7 *Okt.* 1856 *af afgående ordföranden* Dr. J. F. G. Keyser. Stockholm, 1857. P. A. Norstedt och Söner.

A Sketch of the History and present State of Otology: an Address delivered at the Annual General Meeting of the Swedish Society of Physicians, on the 7th October, 1856, *by the outgoing President,* Dr. J. F. G. Keyser. 8vo, pp. 55.

The lateness of the period at which we received Dr. Keyser's pamphlet prevented us from reviewing it more at length in our article on "Recent Swedish Medical Literature." It is an interesting resumé of the history of aural literature from the earliest times to the present day, in which we are happy to observe that the author names Mr. Wilde, "as occupying the foremost place" among writers on otology.

PART III.

MEDICAL MISCELLANY.

TRANSACTIONS OF THE ASSOCIATION OF THE FELLOWS AND LICENTIATES OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND.

(*Continued from* vol. xxiii. p. 217.)

SESSION 1856–7.

THIRD MEETING, JANUARY 7TH, 1857.

DR. HENRY KENNEDY read a paper upon the *Character of the Spots observed in Fevers;* having special reference to the diagnosis of typhus as distinguished from typhoid fever, in which he endeavoured to prove that fevers could not be classified according to the varieties of spots.

FOURTH MEETING, MARCH 4TH, 1857.

DR. HENRY KENNEDY read a paper upon the following question: "*Is Intestinal Hemorrhage Diagnostic of Typhus or Typhoid Fever?*" He thus proceeded—

"On the last night of meeting a very animated discussion followed the paper 'On the Character of the Spots observed in Fevers; having special reference to the diagnosis of typhus as distinguished from typhoid fever.' Some of the Members thought that the subject was not exhausted, and might be brought forward again. With this impression I venture to do so. But I will introduce the subject under a different aspect.

"Some time since an essay 'on Hemorrhage in Fevers' was published in the Dublin Journal. Amongst the several forms, one in particular was spoken of at some length, viz., hemorrhage from the bowels. Its great importance entitled it to a lengthened notice. Several points directly connected with this special hemorrhage were mentioned: such as its site, quantity, the stage of the disease at which it appeared, relative mortality, and so on. These I shall not again allude to, but will confine myself, as much as possible, to a

single point which appears to me to call for more consideration than I believe it has yet received.

"Probably I cannot better introduce the subject than by alluding very briefly to the experience I have had since the essay alluded to was published. Three additional cases have come under my own notice, all of which recovered. This makes the entire cases I have seen forty-two; amongst which there were eleven deaths; or as nearly as possible, 1 in 4. Considering the nature of these cases, this mortality will, I think, be looked on as low—a matter of some moment; for I rather think the idea amongst the profession is, that they are a much more serious class of hemorrhages than this mortality would lead us to suspect. It is worth noting, as regards sex, that the forty-two cases are exactly divided. Of the three I have just spoken of, two presented nothing unusual: the third I shall detail.

"Case I.—A girl, aged eleven years, was attacked with the symptoms of fever, such as are seen at that period of life. There was some irritability of the stomach at first, and the tongue was reddish and covered with a thick white coat. She was in a very small room, considering the number who lived in it; nor could I induce the parents to send her to hospital. A very marked crisis by sweat occurred about the ninth day, and the child was shortly after able to get up. She then relapsed, the fever being much more intense than at first. This attack was prolonged, with very little change, till the fifteenth day, the skin having kept burning hot all the time. At this period, and after several hours of great restlessness, she was seized with bleeding from the bowels, the shock being so great that the people round thought she would have died. She passed about ten ounces of black semi-coagulated blood, with no trace of fæces in it. This I saw. From this state, by ordinary means, she rallied, and so continued for fourteen hours; when there was a second rush of blood, but not so large as at first. After this she got steadily though slowly well: a severe cough having come on during her convalescence.

"I have detailed this case, though not one of any particular interest, because it enables me to make a few remarks in direct connexion with the special point I would bring under notice this evening.

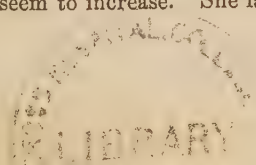
"The case, it may be observed, was a good example of what probably is the most frequent form under which hemorrhage from the bowels occurs in fevers; that is, after a prolonged attack a sudden gush takes place, which is renewed; and yet, speaking generally of such cases, they ultimately do well. In my own experience the greater number of the cases, by much, have presented marks of what is known as the strumous diathesis; this patient was a good example of it; and the point, I believe, is one of considerable importance to keep in mind, especially when we come to consider the treatment. The number of times in which there may be a rush of blood is, in some of these cases, truly remarkable; and even a week

or more may be so occupied, rendering such cases most critical, and puzzling the physician to understand how the system can hold out under such repeated losses. And yet, I must say again, that the great majority of them do well ultimately. That the blood itself is profoundly altered there can, I presume, be little doubt; but what the alteration consists in has yet to be determined.

"It is to other points, however, than these I would wish to direct the attention of the meeting this evening: nor can the subject be better introduced than in the form of a query:—Is the fever known as typhoid, that is, attended with ulceration of the ileum, usually characterized by hemorrhage from the bowels? I believe this to be a point of some consequence to ascertain; for the general impression seems to be that hemorrhage and ulceration go hand in hand; and I know that some able writers have stated the like opinion. If, however, this should prove to be incorrect—as I rather think will turn out to be the case—it follows that we may get a new diagnostic mark between the two types of fever; and where difficulties exist, as all admit do, the clearing up this point may be of some consequence.

"I would begin, then, by observing that all the analogies we know of are opposed to the idea that ulceration of a mucous membrane is attendant on hemorrhage from the same part. Thus in fevers we have bleedings from the nose, bronchial mucous membrane, stomach, and uterus; yet in none of these do we ever think of looking to ulceration as a cause or attendant on the hemorrhages. On the contrary, we know that it is by exudation the blood is yielded, and that no abrasion at all exists. And so it is in intestinal hemorrhage; the blood is poured out, and, as I have now had several examples of ascertaining—through looking closely for it—without any abrasion, to say nothing of ulceration, whatever. Indeed, the source of the bleeding, as I have stated before, is still an undetermined point; though I believe it is most usually from the small intestine the blood comes. It is true I have found traces of blood in the large intestine, where there had, during life, been hemorrhage; but the pale state of the membrane here, compared with the intense congestion higher up and in the small intestine, satisfied me that the blood had been exuded above, and then passed downwards. As more certain proof, however, on this point, I venture to detail again a case, which, though given already, is so remarkable, I may say unique, in every point of view, as to entitle it to the fullest consideration, besides that it bears directly on the point under consideration.

"Case II.—A girl of thirteen years of age, well-grown, passed through a mild fever; and was so far better as to have asked for food; but at this period the fever had not ceased. On the evening of the twelfth day of her illness she was suddenly seized with collapse, marked by cold and livid extremities and weak pulse. She also vomited, and complained of pain in the abdomen, which, however, pressure did not seem to increase. She lay on her back, with



her legs drawn up, and was quite collected. She continued to retch, at intervals, through the night, and also complained of pain, but not of a severe character. Her face, however, gradually assumed a pinched and livid look, the extremities became colder and colder, the pulse failed at the wrist, and she died just fourteen hours after the first signs of collapse had set in, being the thirteenth day of her illness. On examination, for which I was indebted to the kindness of my friend, Surgeon Shannon, the cause of death became at once apparent. A large effusion of loosely coagulated blood, of a very black colour, occupied the lower part of the jejunum, and upper portion of the ileum. Twenty inches of intestine were so occupied, and the mucous surface was of the very deepest dye; but the closest examination could not detect any abrasion. There was no blood either above or below the part indicated; near the sigmoid flexure lay a small portion of fæces of a healthy colour. The contrast between the parts where blood lay, and where there was none, was truly remarkable.

"Such is the sketch of a case of no common interest, which would admit of discussion in several points of view, but which I have given here as showing, first, where hemorrhage from the bowels, in the progress of fever, may come from; and secondly, that blood may be poured out in large quantity without any abrasion.

"But what is the result of general experience as bearing on this point? In Louis' able work on Typhoid Fever nearly sixty cases are accurately detailed; and of all these there are but two in which hemorrhage from the bowels occurred; and not only this, but he also draws attention to the extreme rarity of the occurrence; showing more directly his opinion on the matter. Andral speaks of the exhalation of blood from the mucous membrane of the small intestines; but he especially notices that it is not met in connexion with any lesion of the mucous membrane. He speaks, too, of fatal cases of this kind: a fact, by the way, which proves that typhoid is not the exclusive fever of France. Bright, again, in his valuable series of cases, amounting to twenty, incidentally mentions hemorrhage but once; nor does he give it as a symptom of the disease at all. My own observations go entirely the same way; for I have seen but twice, in a series of years, the occurrence of hemorrhage in typhoid fever. One case ran out to the twenty-ninth day, and here the bleeding occurred on the eighteenth and nineteenth days. The other case was shown very lately at the Pathological Society by Dr. M'Dowel.

"One author, Dr. Jenner, of London, it is right to state, has arrived at a different conclusion from those just quoted. Out of twenty-one cases, he gives as many as one-third where hemorrhage took place. I am quite at a loss to explain this discrepancy; for it will be observed, it is directly opposed to Dr. Bright's observations, as given before, as well as the others; and yet the experience of both gentlemen was obtained in London. It would have been desirable if the treatment of Dr. Jenner's cases had been given, as is that

of Dr. Bright's; for, of late years, some of the physicians of London, I must say, appear to me to have been wandering away from the inductions of legitimate medicine; and sure I am, that the carrying out the tonic and stimulant plan—now so much in vogue there—would be quite sufficient to account for the difference of the observations to which attention has been drawn.

"Ormerod's cases, amounting to thirty-seven, give two fatal instances of hemorrhage attended with ulceration of the ileum. But these thirty-seven cases are not so given as to separate the typhus from those of the typhoid type.

"In Flint's most elaborate work, out of sixty-one cases of typhoid fever, I find but three attended with hemorrhage from the bowels.

"Out of a record of 232 cases of typhoid fever, occurring in patients under fifteen years of age, and given by Taupin, Billing, and Barthez, but one instance of bleeding from the bowels is noticed.

"Chomel, out of forty-two cases of typhoid fever, gives six in which hemorrhage, or rather signs of it, were present; for, out of the six, but two showed it in the ordinary way, by its having been passed. In the other four, fluid tinged by blood, but not blood itself, existed under the mucous membrane of the small intestine.

"To come back, however, to the point more immediately under consideration. The recovery of the great majority of the cases of intestinal hemorrhage, which have come under my own notice, has been rapid, or at least not prolonged to an unusual length. In some instances the bleeding proved distinctly critical; and from that moment the patient made a rapid recovery. Now I think such facts are entirely opposed to the idea that the bleeding was due to or connected in any way with ulcerated intestine; for we have every reason for supposing that the healing of ulcers here is, under the most favourable circumstances, a very slow process; and could not have gone on in the comparatively short period in which convalescence and health were established.

"To some the discussion of the point brought under notice may appear of little moment. But in reality it is not so. Any fact which has even a tendency to throw light on a question which must still be considered *sub judice*—and such is the question of the identity or non-identity of typhus and typhoid fevers—is of consequence; and if it should be proved that intestinal hemorrhage is of more frequent occurrence in typhus than in typhoid fevers, a diagnostic of no little importance will have been learned. At any rate the point seems to myself well worthy of consideration, and, as such, it has been now brought forward. Probably, in conclusion, I may be allowed to throw into a series of propositions the several points brought under notice in these remarks:—

"1. That intestinal hemorrhage is common to fevers of both the typhus and typhoid type.

"2. That it would appear to be more common in typhus and common fevers, than in typhoid fever.

"That the blood may, beyond dispute, be exuded from the mucous membrane, independent of ulceration.

"That a hemorrhage sufficient to cause death may take place from the mucous membrane of the small intestine, and may be, in the strictest sense, an internal hemorrhage, the blood not leaving the part on which it was poured out.

"5. That the recovery of patients after intestinal hemorrhage is, in general, too rapid to allow us to suppose that it was the result of ulcerated intestine.

"6. That as a corollary from these several points, intestinal hemorrhage may afford us an additional diagnostic mark between typhus and typhoid fevers."

Dr. Montgomery detailed four short cases of an obstetric nature:—

"1st. A case of coma supervening on jaundice with ascites, in a pregnant woman; in whose case there was extraordinary difficulty in detecting pregnancy.

"2nd. Premature discharge of the liquor amnii.

"3rd. Thickening of the placental membranes.

"4th. Remarkable form of prolapse of the pelvic viscera."

Fifth Meeting, April 1st, 1857.

Dr. Law read a paper on *The Effects of the Shower Bath in Delirium Tremens, and other similar Conditions of the Cerebral Excitement.*

Dr. M'Clintock communicated the following case of *Suicidal Poisoning by Strychnia:*—

"Although the number of recorded examples of poisoning by strychnia is now pretty considerable, still I conceive that every fresh instance constitutes an accession to toxicology, and must have a value proportionate to the accuracy and completeness of its details. I am induced, therefore, to bring under the notice of the Association the following history of a case of suicidal poisoning by strychnia. It does not present, I believe, any new feature in the physiological action of this agent, nor does it afford any remarkable illustration of those features which are already known; nevertheless, it can scarcely fail of being heard with deep and painful interest.

"I was not myself an eye-witness of this case, but the physicians under whose immediate observation it fell were well known to me, as was also the unfortunate young gentleman who forms the subject of the history. The facts to be submitted were furnished by the two medical attendants, and I put them forward with the fullest confidence in their correctness. The characters of both these gentlemen, for probity and professional ability, are unimpeachable[a].

"This history was drawn up, at my request, from notes made

[a] The names of all the parties are suppressed, in compliance with the earnest wishes of the deceased young gentleman's friends and relatives.

at the time the case occurred—now some years ago—and was verified by each of the medical observers. Having been placed at my disposal (quite recently, with permission to make whatever use of it seemed desirable), I thought I could not do better than submit its details to the Association.

"Mr. ——, about sixteen years of age, had been for some time labouring under extreme depression of spirits, and total alteration of habits and feelings, so much so that hints were given to his friends to have him closely watched.

"About 5 o'clock A.M. of the 8th November, 1853, the family doctor was urgently sent for, in consequence of Mr. —— having precipitated himself from a top window of the house where he resided, into the area, a distance of thirty-five or forty feet. Under the pretext of wanting to go to the water-closet he had left his room; but the suspicions of his attendant being excited, he followed him in a few minutes, and discovered what had occurred. Not many minutes, therefore, after the fall he was found lying on his back on the flags of the area or yard. He was perfectly conscious, and able to speak. On being helped up, he walked into the house, and, leaning on the arm of his friend and attendant, ascended five flights of stairs to his bed-room. Some fifteen or twenty minutes subsequently Dr. —— arrived, and saw him in bed. After most careful and minute examination he could not detect any fracture or serious injury. There was a small superficial wound of the forehead, and another on the front of the right ankle. While engaged in dressing this latter wound the doctor was struck with the appearance of *spasms of the lower limbs*. The lad was perfectly sensible, and complained only of pain in the lower part of the back and in the left lumbar region, which was somewhat tender on pressure. Dr. —— now observed that the *least attempt at motion* brought on these spasms. After some time he was seized with a violent attack of convulsions, during which the face was very pallid, and assumed a tetanoid expression, but was not distorted as in epilepsy. On the subsidence of the fit he lay for a few minutes in a slightly comatose state, but without any stertor. Previously to this he had swallowed freely. The pulse was very quick and small; respiration very much hurried. As may be well conceived, Dr. —— was very much at a loss to account for the anomalous symptoms which the case presented. The wounds having been dressed, he sat down by the bedside, and entered into conversation with the patient, in the course of which the latter made the confession that he had taken poison 'very early in the morning, and before throwing himself out of the window.' On being closely interrogated as to the nature of the poison, he said it was strychnia, and that he had taken '*eleven* grains spread on bread and butter.' He moreover told when and where he had purchased it. Subsequent inquiry verified these last statements to the letter. On the previous day he had purchased eleven grains of strychnia at the shop of an apothecary near to where he lived, alleging that he wanted it for the purpose of

destroying rats. There is no reason whatever for doubting that he took the whole of this enormous dose.

"These disclosures he communicated calmly, and without apparent emotion; though he expressed deep sorrow for what he had done. All doubts as to the nature of the symptoms, and the cause of them, were now removed. A second medical man was called in, who concurred in the opinion that the symptoms were due to strychnia, and not to any injury received in the fall.

"By this time it became impossible to move or even to touch him, without exciting horrible convulsions, which shook not only the bed but the room. At the height of the paroxysm the body was raised off the bed, as in opisthotonos, and then fell heavily. These effects were produced even by the act of feeling the pulse, or moving the bed-clothes.

"The arms were thrown up above the head by the first attacks of spasms, but subsequently they were thrown violently forwards across the body, and greatly agitated. The eyes during the fits were open, not turned up or congested. The pulse became exceedingly quick, and the respirations were 44 in the minute. The thorax heaved much, and he said some urine was voided during the fits. In the intervals of the convulsions he was able to move his arms freely, though it was not noted whether rigidity entirely ceased in the muscles or not. The adoption of any kind of treatment seemed utterly hopeless. Early in the case he had vomited freely, but the matters ejected, which seemed to consist chiefly of some coffee he had taken shortly before, could not be collected. Again, about seven o'clock, after the administration of 20 drops of chloroform, which he swallowed with difficulty, the stomach was sick. To think of using the stomach pump was obviously quite out of the question.

"Shortly after this second attack of vomiting, the convulsions became more frequent and more violent until 11½ A.M., when he expired in one of the fits.

"Such are the facts with which I was favoured, and which I have given in nearly the same words as those in which they were communicated to me. So far as they go, they may be implicitly relied on; but there are some points which it is to be regretted did not receive more particular attention. To supply, if possible, this defect, I wrote to the gentleman who gave me the above history, seeking further and fuller information; and the substance of his replies I shall embody in the following few remarks:—

"On the day prior to the catastrophe, the subject of the case dined with his family at 6½ o'clock, and drank tea as usual about 9 o'clock P.M.

"There is no reason to doubt his having taken eleven grains of the poison. He confessed this himself; and the chemist stated this to have been the exact quantity he had supplied to him. Some uncertainty, however, exists as to the precise time at which the poison was swallowed. His own confession was, that he 'took it

very early in the morning, and before he went out of the window.' Consistently with this would be the supposition that throwing himself down from the window was entirely an after-thought, and only resorted to as a means of self-destruction on his finding the strychnia not sufficiently prompt in its operation. The family believe he spread the poison over night, which is rather confirmatory of the idea just thrown out, though they think he ate it whilst in the water-closet; but there is no evidence in support of this, and it is plainly contradicted by his own statement.

"The first effect of the poison began to show itself about $5\frac{1}{2}$ o'clock, or $5\frac{3}{4}$ A. M., and was announced by spasms of the lower extremities. A little later, it was remarked that the slightest irritation of the surface brought on these spasms. A fit of general convulsions next seized him; and this recurred again and again with increasing frequency and violence, until at $11\frac{1}{2}$ o'clock he succumbed: so that from the first symptoms of poisoning until the last embraced a period of six hours. The interval that elapsed from the *ingestion* of the poison until the occurrence of dissolution cannot be positively computed; but it must have been over six hours and a half, and very possibly may have been eight hours. This fact alone renders the case remarkable, and places it in strong contrast to the one recorded by Professor Geoghegan, where five grains of strychnia, taken shortly after a dinner of meat and potatoes, produced a fatal result within twenty-five minutes. In the case I have related, the long interval can only be accounted for on the supposition of the strychnia being of very infirm quality. It is hardly possible that any of it was rejected by vomiting, as this did not occur till after the first fit of convulsions (?), an hour at least from the time of its ingestion, and after decided effects had shown themselves. During the fits the body was arched forwards, so as to be raised off the bed, and the upper extremities were, from the first, very notably affected, the arms being much convulsed and thrown above the head, or across the chest. In the intervals of the fits, the pulse was very frequent, as was also the respiration; but he exhibited unimpaired intelligence to the last.

"The expression of the face was remarkably changed, and during the fits 'had very much the appearance of a true tetanic case.' Whether rigidity of the muscles continued after the subsidence of a fit cannot now be positively stated. Between the earlier fits he certainly was able to move the arms freely. After death, it was noted that they remained rigid and elevated, but were straightened without much difficulty. The face at this time was free from distortion, and presented an expression of calmness. He bore his sufferings quietly, and at no time did he utter any screams or loud moans. This differs from what was observed in the case reported by Mr. Adams, where the poisonous effects of the drug were ushered in by 'loud and repeated screams and moanings;' and hence Mr. Adams lays this down as one of the differential symptoms between strychnia tetanus and ordinary tetanus, of which

latter the commencement is silent, he says. I am disposed to think, however, that the presence or absence of this symptom will depend entirely upon the character and psychical condition of the individual.

"Perhaps the most remarkable circumstance in the foregoing case is the gentleman's escape from fracture or serious injury of any kind, after falling through a distance of at least thirty-five feet, and alighting on a flagged yard. If it be true that muscular action is a principal cause of fracture in falls and other such like bodily shocks which people unexpectedly and sorely against their will encounter, why then it seems not unreasonable to suppose that there should be less of this sudden and extraordinary contraction of the muscles in the case of the determined suicide, who wilfully and deliberately seeks death in this manner. In such a person the love of life is extinguished—even the animal instinct of self-preservation is totally subverted. No marvel that he is utterly indifferent to the consequences of *any* act, when he shrinks not from committing against himself a deeper injury than he could receive from the hand of any other man."

Dr. Moore read the following paper on *Scarlatina Faucium.*

"Few practitioners but have met with cases in which it was impossible to define with perfect certainty the presence of this affection. The diagnosis is more embarrassing when these cases of sore throat, without rash, occur during the prevalence of scarlet fever, and in persons in whom that disease has been already unequivocally developed. Called in to such cases, you naturally incline to lay the mischief at the door of cynanche tonsillaris, yet, though there is fever present, it is not of that sthenic inflammatory character so frequently met with in quinsy. On examining the throat you find a peculiar deep redness of the tonsils, uvula, and arches of the palate, and in many cases, though there is no very decided enlargement of the tonsils, at least nothing to prevent the patient swallowing fluids, yet there is almost total loss of the power of deglutition, the smallest quantity of fluid being rejected through the nose; you very frequently find a patch of dark-yellowish mucus deposited on the tonsil, as if resolution had taken place; but such is not its nature: it is of the same family as the grayish or yellowish-white membranous exudation covering the back of the pharynx; remove it, and you will find no loss of continuity, but the membrane presenting a redder appearance than natural. In the course of a few hours a similar deposition may take place. The appearance of the uvula in such cases will not guide you much in discriminating between these affections; it is usually more enlarged, deeply congested, and of a darker colour than in the ordinary cynanche. The tongue is coated with a dirty-white, creamy fur, and occasionally the papillæ may be prominent. In such cases, with scarlatina epidemic, you look for the presence of rash; none is to be found, and although the patient has assured you that he or she has had scarlatina, still there is something about the appearance of the throat, fauces, &c., and the character of the fever

(which I incline to call typhoid), satisfying you that it is not a case of cynanche tonsillaris you are called upon to treat. I cannot exemplify my views better than by detailing the following case. Not long since I was consulted by a lady, aged about fifty years, of dark complexion and lax atonic fibre, the mother of a large family. She complained of slight sore throat and stiffness in the cervical region with pain in deglutition; her skin was perceptibly feverish, and pulse quicker than natural. I ordered her a mild aperient, to inhale the steam of vinegar and hot water, and to take a hip-bath at bed-time. The following day I found this patient very feverish, evidenced not so much by heat of skin as by a quick pulse (100), and general constitutional disturbance, her appearance being most haggard and dejected. She had passed a bad night; her throat was more inflamed; I ordered her to take a castor-oil draught; to apply the compound camphor liniment around and under the jaws, and to continue the inhalation of the vinegar and hot water.

"On the fourth day from the accession of the first painful symptoms I find the following remarks:—'The lady had passed a wretched night, was delirious at times; pulse 110. The throat presented the following appearance:—There was deep redness of the tonsils, palate, uvula, and arches of the palate, for about two inches anteriorly. The left side of the throat was most engaged; there was slight enlargement of the left tonsil, and a patch of dark-coloured mucus rested on it, whilst a similar ropy exudation covered the back of the pharynx. The uvula was deeply congested, and twice its natural size, constricted in the centre, and resting on the tongue, it caused constant distress to the patient. There was almost total loss of deglutition; fluids, the only form of nutriment attempted, were returned through the nose. This resulted, not from any abnormal enlargement of the tonsils, but from the combined effects of the thick, tenacious secretion, and the total inability on the part of the patient to raise the uvula, which hung forward on the base of the tongue. There was considerable enlargement of the parotid and submaxillary glands, particularly on the left side. I examined the skin carefully for rash, but could not find a trace of it. Mr. Adams saw this case with me, and the following treatment was adopted:—A gargle, of decoction of figs, 8 oz., and nitrate of potash, 1 drachm; the patient to reapply the camphor liniment, and the throat to be touched with a solution of nitrate of silver, 15 grs. to 1 oz.; sulphate of magnesia in acid infusion of roses.

"Next day (fifth) the throat was much in the same state; patient slept little; raved; pulse very quick; continued the treatment as before.

"Sixth day. Less inflammation about the throat; pulse 90; fever subsiding; she passed a better night; prescribed the following:—decoction of pomegranate, 1 pint; dilute hydrochloric acid, 2 drachms; honey of borax, 1 oz.: to be made into a gargle; the application of the nitrate of silver to be continued.

"Seventh. Amendment continued; patient had a steady convalescence.

"This lady, as soon as she felt able, left for the country, and went direct to the house of a very near relative; all the younger members of this family became affected with scarlatina, and two of them died. Willan states that scarlatina faucium, as he calls these sore throats, is capable of communicating by infection all the varieties of this disease.

"In Graves' 'Clinical Medicine,' edited by Dr. Neligan, there is a case related of a lady having had sore throat, no rash, conveying the infection to a whole family; and, in connexion with this subject, the following remarks:—'That in acute and chronic diseases a constitutional affection may display its existence by only one or two of the numerous symptoms which usually accompany it. This is to be expected where you meet with scarlatina occurring for the first time in this form; but in the case I have detailed to you the patient had an undoubted attack of this exanthema in early life, and yet this second attack, in the masked garb of sore throat, was capable of conveying the infection, and propagating the disease in the most malignant form.'

"I think we may fairly conclude that the virus of scarlatina is more rife than is supposed, inasmuch as it assumes so many different phases. In Dr. Henry Kennedy's admirable treatise on the Epidemics of this disease, from 1834 to 1842, the case of a nurse is related in whom the virus ignited all the symptoms of continued fever, the patient having had the disease in an unequivocal form in early life.

"Dr. Bower Harrison, of Manchester, in his paper on Scarlatina, relates the case of a lady who had sore throat, having previously had scarlet fever; he thinks that the influence of the poison in this case gave rise to a complaint which was not distinguishable from the common cynanche.

"And now as to the question, how far these sore throats are prophylactic against a recurrence of the disease with or without rash? In my own person, on the first accession of the disease, I suffered from simple sore throat, and, although often exposed since to infection, particularly in the summer of 1853, I never had the disease with rash, but I have felt a sense of constriction of the fauces and difficulty of deglutition, with general malaise, whilst in close attendance on cases of these malignant sore throats. This I have been assured has been felt by many practitioners. My idea is, that the sore throat, in the first instance, without rash, is, to some extent, prophylactic against a return of a more severe type of this disease, but that it may recur again and again in these modified forms, which are deserving our most careful consideration, inasmuch as they are quite capable of conveying by infection the virus which may be developed in the most fatal form.

"In these remarks it is not my intention to introduce the different complications and sequelæ of this exanthema, but merely to state the treatment which I have found most effectual in such cases. As regards the constitutional treatment, we must be guided by the age and stamina of our patient. As a rule, in the early stage, the

use of purgatives is indicated, either a castor-oil draught, or the acid infusion of roses with sulphate of magnesia. In the case of a child, a grain of calomel with a few grains of rhubarb may be the treatment most judicious and easiest exhibited. The apartment should be kept cool and properly ventilated, occasionally sprinkling some solution of chlorinated lime; tepid sponging will be most grateful to the patients, taking care that they are thoroughly dried afterwards. In many cases the tepid bath at bed-time will be found to procure our patient a quiet night, when more direct soporific remedies fail, and at the same time promote the secretion of urine, which, in many instances, is a source of anxiety to the practitioner. There is no golden rule as regards nourishment; in the case brought forward it was indicated from the first, and in persons of lax, atonic fibre, it is our sheet-anchor; and, if not capable of being swallowed, it should be regularly injected.

"Fresh barm is not only antiseptic and slightly stimulant, but nourishing and laxative. I can recommend it with great confidence in scarlatina where there is great swelling of the parotid and submaxillary glands. Early in this disease the local treatment should be somewhat as follows:—Apply large poultices (which in many cases afford great relief) or a few leeches under the jaws; occasionally counter-irritation. The inhalation of the steam of hot water, or vinegar and hot water, is most grateful, and, besides, induces diaphoresis; gargles are naturally indicated, and, where the patient is an adept in using them, frequently prove very serviceable. The 'decoction of figs and nitrate of potash' is an agreeable emollient, and a judicious one to start with. After the third or fourth day we may prescribe a more astringent gargle with good effect, such as the decoction of pomegranate bark, with hydrochloric acid and alum or borax; whilst at the same time we apply a solution of nitrate of silver in the proportion of 12 or 14 grains to the ounce of water, first having sponged off the ropy mucus. Bretonneau ascribed much success to the 'muriatic acid' treatment in these cases. In the cases of children, where gargles are inadmissible, and where our only applications are either tinctures or the solution of nitrate of silver, the most satisfactory mode of applying either is by attaching a piece of sponge to the top of the finger of a kid-glove, and, having moistened it in the solution, apply it well to the fauces, not omitting the pharynx.

"And now, in conclusion, I will mention the inferences which seem to me satisfactory:—

"First, that these sore throats which I have attempted to describe are prophylactic against the recurrence of scarlatina with rash.

"Secondly, it is a reasonable deduction that the virus of scarlet fever may operate in constitutions which cannot develop this disease in the ordinary forms, but may give rise to sore throat, general malaise, &c., all of which are modifications of this exanthem, and capable of extending the disease.

"Thirdly, that during the prevalence of scarlatina these marked

symptoms, occurring more particularly in a patient who has previously had an unequivocal attack of scarlatina, are deserving our most serious attention, and the greatest caution is to be observed on being interrogated as to their nature and liability to communicate infection."

Sixth Meeting, May 6th, 1857.

Dr. Osborne read a paper on *Medical Inhalations*, detailing the effects observed by him from the employment of vapours of cubebs, turpentine, conium, burning touch-paper, &c., &c.

Dr. Lees mentioned a case of *Sthenic Purpura Hemorrhagica*, in which he tried ergot of rye without effect; but which was easily overcome by the use of gallic acid.

Dr. Lees also exhibited a beautiful drawing of *Apoplexy of the Kidney*. The subject to whom it belonged had died of typhoid fever.

Dr. A. Smith related a case of *Pneumonia* which occurred in Sir P. Dun's Hospital. The case was treated successfully by rapid salivation. In this case there was "protrusion of the intercostal spaces and diminished vocal resonance." Dr. Smith was of opinion that mercury was necessary for the cure of pneumonia.

Dr. H. Kennedy read the following case of *Disease of the Heart*:—

"Though our knowledge of disease has increased much within the last quarter of a century, it must still be admitted that much remains to be accomplished. This is not the place to enter at large into the various subjects which require further research; but to one, as connected directly with the case about to be brought under notice, I would direct attention—I mean the combinations of disease which we so often meet, and which may prove so difficult of diagnosis. As an example of this I might adduce chronic disease of the kidney, on which, as all are aware, acute affections are so very apt to be engrafted. But though disease of the kidney has been taken as being possibly the best recognised example of the frequency with which acute supervenes on chronic disease, still the same course of events is very liable to occur in other chronic affections. Thus in the progress of phthisis we may have bronchitis, pneumonia, or pleuritis set up; or, what is not so generally known, we may have acute disease occurring in the brain, throwing the chest symptoms completely into the shade. Neither do chronic affections of the heart offer any exceptions to the general remark: for all know how frequently acute diseases supervene on the several chronic affections of this organ. It is still possible, however, that these are not yet as fully recognised as they deserve to be. Dr. Stokes says, in his last able work—the diagnosis of the combination of diseases, even in so small an organ as the heart, is still to be marked out. In this I

fully concur, and, as bearing directly on the point, would bring under the notice of the Association the following case:—

"Case.—Very early in the morning of the 9th of April of this year I was brought to see a lady, aged fifty-four years, who, I was informed, had been up and about five days previously, when she was attacked with what appeared to be a heavy cold, confining her to bed. I learned that she had been subject to cough for some years, and was liable to severe exacerbations of this, as also of dyspnœa, which latter symptom seemed to have increased much within the last four months, and was particularly distressing on ascending a height; on several occasions she had spent the entire night coughing, at the same time that she expectorated a good deal, but she never spat blood. I also learned that, about two years previously, she had what I could not doubt to be an attack of gout in one foot. There were also causes which had given her great anxiety of mind, and within the last year her friends observed that she had lost flesh considerably. Such were the antecedents of the case.

"My first glance at the patient conveyed the impression that she laboured under a chronic and wasting disease; for she was emaciated, her aspect sallow, and in a very marked degree unhealthy. There were some dyspnœa, and occasional cough, but neither to a painful degree, nor, when asked, did she admit of any distress or pain whatever, and she was asked on this point again and again. There was a certain amount of fever present: her tongue was slightly furred; her skin a shade above the natural temperature, and her pulse about 108, perfectly even in its beats, but of a very small caliber; the bowels were confined, and, apparently in consequence of this, there had been some vomiting, for the latter ceased when the bowels acted. She had no rigor at any time.

"The physical signs were, a clear percussion everywhere, with a corresponding clearness of respiration, almost amounting to puerility, and over the entire chest bronchitic râles, confined, however, to the larger tubes. To the hand placed over the heart a very marked impulse was communicated, out of all proportion with the pulse at the wrist, which, as I have already stated, was remarkably small; but neither to the hand nor the stethoscope was the heart's beat of that character which conveys the idea of hypertrophy. The impulse, though strong, was limited, and what might be called abrupt; the two sounds of the organ were quite distinct, nor was there any morbid sound whatever, and percussion did not appear to me to be different from what is natural.

"In addition to the symptoms just given, there were others of a totally different character, which it has appeared to me best to speak of separately, as possibly by this plan the case will be more forcibly brought forward. These were entirely referable to the brain. There was a marked frown on the forehead, whilst the pupils were contracted to a pin's point, and so fixed that the absence of light seemed not to affect them. There were besides, every now and then, twitchings of the muscles of the face, which, it was

stated, had been more marked; and also subsultus of both arms shown occasionally at the wrists. It could not be said that the patient had any wandering, for she answered directly when spoken to. Still the people round thought her manner strange, and so it appeared to myself.

"Under all the circumstances, and in consultation, it was determined to put a blister over the heart; to have the bowels quietly freed, and to give wine.

"The patient was visited late in the evening of the day: indeed the only day I saw her. The only marked change was a considerable increase in the subsultus of the arms; but there was no urgent dyspnœa, nor any alteration in the pulse. There was, however, some perspiration of a clammy kind, and the entire appearance of the patient led me to fear she might not live through the night. A strong turpentine stupe was directed, after which she slept some hours; but on awaking complained of her breathing, and shortly after expired, just seven hours from my last seeing her.

"Though the post-mortem examination was not as complete as could have been desired, still I believe it cleared up in great part, if not entirely, the obscurity which hung about the case. The body was emaciated; the soft parts over the thorax being entirely devoid of fat, but the chest was tolerably well formed. The lungs might be said to be comparatively healthy; there was a strong adhesion at the upper and back part of the right, and there were marks of chronic bronchitis on the mucous membrane. On opening the pericardium, I found to my surprise one of the forms of pericarditis. It was confined exclusively to the base of the heart and great vessels, and the effusion was of the character of thick pus, so thick as to be retained in its place as long as the heart lay *in situ;* but when the organ was removed, so that gravity came into play, the pus then began to spread itself slowly over the rest of the heart. Under the pus I could detect the very finest coating of lymph; whilst, in the strictest sense of the term, there was no liquid effusion whatever. The quantity of purulent matter would probably have measured an ounce. The heart was larger than natural, and was guessed about twelve ounces weight. In addition, its texture was much degenerated, being of a pale tawny hue, and very friable, so much so that, when drawing it forward to cut across the great vessels, my finger sunk into the posterior surface. The whole organ was degenerated; but it was more especially so in the right ventricle, where very little muscular structure could be seen. The valves were perfectly healthy. The liver had commenced to take on the fatty degeneration. This was all the length to which the examination could be carried.

"Such is the sketch of a case which appears to myself of more than common interest, and presents several questions of moment, to some of which I shall venture to call the attention of the Association. It is the first case I have met where pericarditis supervened on a fatty heart; neither have I read of anything similar; and it

is more than probable that the physical signs during life were modified by this very combination. It will be recollected that there was no frottement or other morbid sound present; and I think it may be stated that they would have been detected had they existed; for, though I did not look for frottement, I did look particularly for some form of soufflet, and, had the former existed, it would have been heard. This is not the first instance I have met, where, with a pericarditis, there was no frottement; and it appears to me that, in this particular case, it is to be explained by the nature of the effusion, which was so different—being actually pus—that the heart's motion could not have generated a sound. And this leads me to speak here of the diagnosis. It is scarcely necessary to state that the pericarditis was not detected during life. The age of the patient, the denial of pain, the absence of frottement and rigor, and of any of those general signs which actually accompany the disease, such as a strained posture, dyspnœa, &c., all combined to lead me astray, and indeed to put the idea of any acute disease out of my head. Hence, post-mortem examination was the first means of declaring the existence of pericarditis. It is but right to state, however, that I was convinced, during life, of the presence of a fatty heart; and the diagnosis, in this respect at least, proved to be correct. Before concluding there will be occasion to allude to this point again.

"Of the nervous symptoms present it need only be said that they tended to complicate a case already sufficiently so. They did not give me the idea that they were due to mischief going on in the brain; and with the knowledge gained by the post-mortem examination they may now, I think, be fairly attributed to the pericarditis. We know that this disease occasionally gives rise to nervous symptoms of a very marked character. It has not chanced to myself to see such before in connexion with pericarditis alone; but I have seen them in cases of pleuritis and pericarditis conjoined, and more particularly where the serous membrane covering the diaphragm was inflamed. I have also seen exactly similar nervous symptoms in fever connected with lesion in the small intestine—post-mortem examination proving, that while the latter existed there was nothing in the brain to account for the symptoms[a]. On the whole, then, I would repeat, that the nervous symptoms present in the case now detailed would appear to have been sympathetic or reflex actions, as they are called at present.

"It has been already stated that the diagnosis of fatty heart was made before the death of the patient. To enter into this important question at large would far exceed my present limits. There is one point, however, which, as illustrated by the case, I would direct attention to, believing it to be one of moment, and, as far as I am

[a] "To the nervous symptoms arising in fever I see that my friend Dr. Hudson has directed attention in an able Paper just published in the May Number of the Dublin Quarterly Journal."

aware, not yet recognised. It will be recollected that in the case given there was no murmur heard over the heart; in fact, the two sounds were clear and distinct: while on examination the valves were quite healthy. Now this very absence of morbid sound was one of the reasons why the diagnosis of fatty heart was made. But this requires explanation; for it might appear strange that healthy sounds and valves could be made a cause of the diagnosis of disease, and that disease situated in the heart itself. Yet, so it is. It is now upwards of seven years since a short paper on fatty heart was read before the Surgical Society of Ireland. In it, besides other points, I took occasion to call attention to one in particular which seemed of some moment, and which came under my notice whilst making inquiries on the subject. I found that in the details of cases of fatty heart, it was often stated that the valves were found healthy. This was at first, however, but an impression; and as impressions are very apt to be erroneous, I set about making inquiries which might settle the point. In a short time some fifty-three cases of fatty heart were collected; and out of these no less than forty-three were stated to have had healthy valves, whilst even of the remaining ten it was stated that of six of them the valves, though diseased, were capable of performing their functions. The proportion, however, of 43 to 10, that is, of 4 to 1, appeared to be sufficiently striking. Since then I have continued noting all cases of the kind which came under my notice, and though not yet tabulated, they confirm in a very marked way what is stated above. Hence, then, the conclusion may fairly, I think, be arrived at, that in cases of fatty heart valvular disease is rare; and when it even does occur, it is very generally of a peculiar kind, the valves then being thick and leathery, and in many instances capable in this state of performing their natural functions. In point of fact, ossific deposit in the valves may be said to be rare.

"A recognition of the fact just stated would appear to be of much moment at the present period, when so much attention is being given to the subject of fatty heart. I have said that it has enabled myself to diagnose the disease; I mean as far as any single sign could, and this, not in one but several instances. A very marked case of the kind occured within this fortnight, where, through the kindness of my friend Dr. Shannon, I was able to put the matter beyond dispute, by obtaining a post-mortem examination. Of course, in the cases I speak of, there were symptoms present, pointing directly to the heart as being the organ at fault. Hence the diagnosis was made up of contraries, if I may so speak. There were signs pointing to disease of the organ at a time when its sounds were healthy.

But other thoughts arise out of the fact stated. Thus it proves, and this is beyond any doubt, that with the sounds of the heart healthy, there may at the same time exist the most serious state of disease of its structure; and hence the great necessity for caution, if, for example, we are called on to give a certificate for in-

surance. The converse of this, too—though not by any means so well established—may be also given: that is, if we find a rough soufflet in the heart, the presumption is that the organ is not fatty. How far the thickened state of the valves, of which I have spoken, alters the natural sounds, has yet to be determined. This much I may state, that in some of these cases the sounds are not changed: and whilst in others they are muffled, as it were, no morbid sound at all being present, the accurate diagnosis of this form of thickened valves, especially of the aorta, presents yet a wide field for investigation.

"In the last place, the existence of healthy valves, at the same time with fatty change of the texture of the heart, leads to the question of treatment. And here I cannot but state my conviction that with an improved diagnosis, by which I mean the detection of fatty change at an earlier period than has hitherto been done, we may hope, not only to arrest, but I would go further and say, cure the disease. No one is more aware of the difficulties which surround the subject than myself; whilst to some, I know, the very idea of a cure seems absurd and impossible. In the later stages of fatty degeneration, when, unfortunately, the disease is, at present, only apt to be recognised, cure may be considered impossible. But at an earlier stage, and, it will be recollected, with healthy valves, I really can see no good reason why the disease might not be arrested. Inviting though the topic be, however, it cannot be pursued farther on this occasion.

"In conclusion, I would throw into a series of propositions the points here brought under your notice:—

"1. That acute pericarditis may occur in connexion with fatty heart.

"2. That this complication may be farther complicated by the presence of cerebral and nervous symptoms.

"3. That this state of the heart and pericardium may not be attended by frottement.

"4. That fatty heart is very generally joined with a healthy state of the valves.

"5. That one of the signs diagnostic of fatty heart is the existence of healthy valves and sounds.

"6. That healthy sounds and most serious degeneration of the organ may coexist.

"7. That the cure of fatty heart, in its earlier stage, comes within the range of possibility."

Seventh Meeting, June 4th, 1857.

Dr. Churchill read the following paper on *the Employment of Carbonic Acid Gas* in certain diseases:—

"The affection in which I have tried carbonic acid gas most frequently is irritability of the bladder. This is a secondary affection, well known, I am sure, to all who have much to do with diseases of females. In by far the majority of cases, it is secondary to some irritation of the uterus or ovaries, and may occur either

early in such diseases, or towards their decline, and lasting very often long after the primary affection has been cured. It has a strong resemblance to the ordinary form of irritable bladder, and, in some few cases, may prove as intractable, although, generally, it is much more manageable. In by far the majority of cases I have seen, the urine is acid, in some cases remarkably so. But the irritation does not appear to be caused by the passage of the urine, and there is no scalding; but, after the bladder is emptied, the powerful effort of the bladder to expel a few more drops is very distressing. The suffering is very considerable at these times, and there is a constant sense of uneasiness, sometimes amounting to pain; in the repose of the bladder, in the severer cases, moreover, the necessity of passing water is very urgent and repeated. I have known the attempt made twelve, fourteen, and twenty times during the night, and oftener during the day; one patient assured me that she could scarcely abstain for four minutes during the day. I do not think that the entire quantity is much increased, nor is it diminished.

"I have already mentioned that the urine has almost always an acid reaction; besides this, I have, in some cases, observed copious deposits of the lithates and purpurates, and in all severe and long-continued cases more or less mucus: in one case only was the straining accompanied by striæ of blood.

"The condition of the uterus which I have generally observed in these cases was one of considerable congestion, caused, aggravated, and continued by some form of menorrhagia, i. e. either too frequent menstruation, or excessive discharge at the regular periods, or, perhaps, a too frequent return, as well as an excessive quantity. In a few cases there was granular erosion, and in some a degree of ovarian irritation, which I believe was itself secondary to the affection of the uterus.

"The only exciting cause which I have found influential is cold, exposure to a cold atmosphere, to cold winds, or damp feet.

"I have said that, as a general rule, this secondary affection is more manageable than the disease ordinarily described as 'irritable bladder,' and I cannot doubt that many have cured such cases very often. Warm hip-baths, alkalines, sedatives, opium, pessaries and suppositories, tonics, &c., in various forms, will succeed, and it is possible that in many cases the cure of the primary affection may be followed in time by the spontaneous subsidence of the vesical irritation.

"But there are cases much more obstinate, and which resist all the ordinary remedies for weeks, months, and even years. It was with such a case that, with Dr. Lees' permission, I determined to try the carbonic acid gas. This case, M. A., I first saw in another hospital for a granular erosion and congestion of the cervix uteri, which was relieved by the usual means. I do not remember that she made prominent mention of the condition of the bladder; at all events she left the hospital, and I lost sight of her until she entered the Meath Hospital under Dr. Lees, who asked me to exa-

mine her, and by whose kindness I am allowed to bring forward these particulars. I found the cervix free from disease, and her whole complaint directed against the bladder or urethra. She said that she could only retain her water for a short time, that she sufferred great pain and tenesmus immediately it was passed, whether she passed much or little at a time. The quantity was not increased, but it came away in spoonfuls, and she had constantly an uneasiness on the pubis and round the loins. The urine was acid, with considerable mucous deposit, and sometimes striæ of blood in the mucus. Her health was suffering considerably, and especially from want of sleep, for she had to pass water twelve or fourteen times during the night, and once as often as eighteen. The demand was as imperative and nearly as frequent during the night as during the day. The pulse was quiet; tongue slightly furred; appetite bad; and bowels pretty regular. Menstruation was regular. At first we suspected it might be a case of urethritis, and the more as there was one part of the urethra somewhat painful to the touch of the catheter. But we soon saw that the bladder was prominently involved, and we tried alkaline medicine, opium by the mouth and in the form of vaginal pessaries, and in enemata, with hip-baths. Some benefit was derived from these measures, but the case was still unsatisfactory when Dr. Lees allowed me to try the carbonic acid gas to the vagina. From the first she derived more relief than from any other remedy, and its repetition was gradually followed by a subsidence of all the distressing symptoms, until she was able to leave the hospital in a state of comfort.

"Some weeks after she called at my house, first, as she said, to tell me how much better she was, and to thank me, and also to apologize for having told me a lie as to the duration of the complaint, which, instead of a few months, had been of nine years' standing, and for which she had undergone a great variety of treatment. Her excuse was that she thought she would have been sent out of hospital if we knew that she was such an 'old customer.'

"The second case, Mrs. D., remained in a delicate state after her confinement in the summer of 1856, which was increased by nursing. On the 7th of November she was suddenly seized with violent pain, accompanied by desire to pass water very frequently, and vesical tenesmus. The urine was acid, mixed with some mucus slightly tinged with blood. Pressure upon the upper wall of the vagina gave some degree of pain. Alkalies, opiates, fomentations were tried, but with little success, before I saw her. I determined to try the carbonic acid gas, and I can truly say that her steady improvement dates from the first use of it. It was administered at first every second day, and afterwards every day, or even twice a day, according to the amount of distress. Any slight increase of distress was instantly relieved by it. She has now been some time quite well.

"Case III.—Mrs. B., aged 43, has had a large family, and is a large fat woman. She had been under my care for some time for

congestion and erosion of the cervix, and enlargement of the uterus generally, with some depression. She menstruated every sixteen or seventeen days successively. Under appropriate treatment the uterus had nearly resumed its natural size and position, and the erosion was quite healed, when she took cold during the prevalence of the north-east winds. She was attacked by uneasiness, and occasionally severe pain in the bladder, with frequent desire to pass water, and tenesmus afterwards. The urine was acid, without deposit, and only occasionally with a trace of mucus. Sedatives and alkalies were used, at first with little if any benefit. Poultices and fomentations afforded temporary relief, and I proceeded to try the carbonic acid gas. Some relief was afforded at first, but I do not think the progress was so rapid in this case as in the others. Under its use, however, every second day, she has now quite recovered. I ought to mention that when the pain was most severe she obtained great relief from one of the Edinburgh suppositories, containing half a grain of morphia.

"Case IV.—Mrs. A., aged 34, married, but without children, caught cold first after a menstrual period, and was attacked by a frequent desire to pass water, with great vesical tenesmus, and pain over the bladder. She was a delicate woman, and the loss of rest was felt very much. The urine was acid, containing abundant lithates and some mucus; the use of one of the morphia suppositories relieved the severe pain, and the administration of carbonic acid gas every second day for about a fortnight completely cured the irritability of the bladder.

"I need not trouble the Society with further cases. I have related them because they were good examples of the disease, and of the effect of the remedy. They occurred under somewhat different circumstances, differed in the length of time they had existed, and in the amount and variety of the remedies used, but agreed in this, that carbonic acid gas afforded quicker and more decided relief than anything else. I feel that more instances and greater experience are necessary to draw any very certain conclusions, but I hope I have said enough to recommend the remedy to the profession.

"In the next place, I would beg to direct attention to a reflex irritation, more or less familiar to all: I mean that produced by certain conditions of the cervix or entire uterus upon the stomach, as in the instances of hysteric vomiting, and the vomiting of pregnancy; and the probability of affording relief by acting upon the uterine centre.

"Some years ago I was attending a lady with erosion of the cervix, accompanied by great uterine irritation and dysmenorrhœa. Throughout she was troubled by occasional nausea, particularly in the morning, and this was even more marked as the disease progressed towards cure. Latterly I used the strong tincture of iodine as an application to the cervix, and she herself pointed out to me that for some days after its use she remained perfectly free from sickness of stomach. Long after the cervix was apparently

quite well, she experienced occasional returns of this morning sickness, which was instantly and invariably relieved by the application to the cervix. As this clearly was a case of reflex irritation, whose *point de départ* was the uterus, I was led to think that perhaps other reflex irritations, having the same origin and the same seat, might be relieved by applications directed rather to the locality of the former, than the latter; and I determined that the next instance of excessive vomiting of pregnancy I met, I would treat in this manner. Years passed, however, without my seeing a case sufficiently aggravated to make the patient willing to submit, or myself willing to propose, the necessary application. Last November or December, however, I was requested to visit Mrs.——, who was then in the sixth or seventh week of her fifth pregnancy. She had borne two children at the full time, and had two miscarriages, and with all she had suffered from aggravated vomiting, commencing soon after conception, and continuing until the uterus expelled its contents. Each time she was exceedingly reduced, so much so that it had been a question of inducing abortion or premature labour, but this trouble was spared by its spontaneous occurrence.

"When I first saw her she was confined to bed, quite unable to bear the upright position. She had menstruated for the last time about seven weeks before, and for about six she had been incessantly sick, night and day; she slept little or none, and retained literally nothing on the stomach, even a teaspoonful of cold water was instantly rejected, and her distress—I might truly say, her agony—was extreme; she was exhausted, pale, and emaciated, very despondent, and only hoping that a timely miscarriage would relieve her of her misery. She had tried various medicines, which *could* do her no good, because they were not retained a moment. In addition to the irritability of stomach, she was much annoyed by diarrhœa. Here there was a fair case to try the effect of local applications to the vagina and cervix, and I was especially led to do this because medicine by the mouth could not get fair play.

"I first tried an opium pessary in the upper part of the vagina, then repeated applications of tincture of iodine; but although these afforded some relief, they did not satisfy me, and I determined to give the carbonic acid gas a full trial. I applied it every second day, and we had not used it a week when I found out that she had some intervals of rest from vomiting, some sleep, and at length that she had retained some fluid, and afterwards some solid food. Of course she had still much distressing sickness, far beyond the average; but, encouraged by the slight improvement, I persevered, and gradually the vomiting became less severe and less frequent, the rest longer, and the sleep better. The appetite returned, and the greater portion of food was retained. By the end of the third month of pregnancy the sickness had left her, all threatenings of abortion had ceased, she rose to breakfast, took her meals with her family, and was able to drive out.

"It is true that in ordinary cases the vomiting of pregnancy lasts

but about three months, and this ceased after three months; but then it must be remembered that the cases of excessive vomiting are generally more prolonged; that in her previous pregnancies Mrs. —— suffered to the end; whereas the mitigation in the present instance commenced at the end of the second month.

"She is shortly expecting her confinement, and is so much improved in health and appearance that, when she walked into my study the other day, I did not know her.

"The two points of interest to which I beg to call especial attention are—the attempt to treat the case locally, which I believe has never been tried before; and secondly, the favourable effect of carbonic acid gas for this purpose.

"The last case with which I shall trouble the Society is one of hysterical vomiting treated locally. The patient is a delicate lady from the country, who some time ago was treated in Edinburgh for uterine displacement (retroflexion). When there, a mixture was ordered for her, containing tartar emetic, of which she took by mistake a fourfold dose, and the result was, of course, excessive vomiting. That she describes as the commencement of the present complaint, which, besides very delicate health, consists in vomiting every evening, and sometimes in the course of the day. The vomiting does not occur immediately after a meal, but some two or three hours afterwards. She was treated most judiciously by the practitioner in the country under whose care she was, and I think every remedy for the stomach was tried, and failed. Then it was suspected that there must be ulceration or some organic disease of the stomach; and she was sent up to town, first, for me to ascertain specially the condition of the uterine system, as she had suffered from misplacement, and then from erosion; and secondly, that Sir H. Marsh should be consulted as to the existence of organic disease of the stomach. I may say at once that, after a patient and careful investigation, Sir H. Marsh decided that the symptoms did not warrant that conclusion. I found the cervix uteri tender, red, but not much swollen, and not abraded; there was some degree of enlargement of the body, and partial retroversion; no abdominal pain, and no tenderness. The patient had a pale, worn, suffering appearance, and was very thin.

"As we had agreed that there was no disease of the stomach, and that the case was probably one of the varieties of hysteria, or hysterical vomiting, I determined, on the failure of some remedies advised by Sir H. Marsh, to try the effect of treatment directed to the uterus.

"I first tried the carbonic acid gas, but I cannot say that much benefit was derived from it: it seemed to soothe the parts, and I think the vomiting was not quite so frequent, but that was all. I therefore determined to try the effect of the strong tincture of iodine to the cervix, and under this treatment she rapidly improved. The cervix has become full, and much less tender; the uterus is less, and has resumed its natural position without mechanical aid; but the menstruation is still scanty. The vomiting has almost ceased; it

only recurs occasionally, and not severely, and she is able to take a variety of food with comfort, which she has not been able to do for a year and a half. She has gained flesh, and is now able to take a good walk, such as she has not taken for years. In short, she has now had a month of such health and comfort as she has not enjoyed since the commencement of her illness. The case is still under treatment, and I am in great hopes of a successful result; but considering the ordinary and uncertain character of these hysterical disorders, it would be presumption at present to pronounce the case cured, nor indeed should I have brought the case forward now except for the corroboration it affords of the results obtained in the previous case by local treatment."

Dr. Atthill brought forward a case of *Abnormal Enlargement of the Labia and Nymphæ removed by the écraseur*:—

"The subject of this case was a young woman, a servant, aged 30, who applied to me under the following circumstances:—She stated that she was suffering from a tumour of the pudenda, which had existed for a considerable time, but of late had caused her so much pain and inconvenience that she was unable to work, and obliged to confine herself to the recumbent posture. On examination I found that the whole of the external organs of generation were in a state of disease, both labia and nymphæ being greatly enlarged, the most remarkable enlargement being superiorly and to the right side, where was situated the tumour for which she sought relief, the other parts exhibiting, in a minor degree, traces of the same disease.

"This tumour, which was of the size and somewhat of the shape of a large saucer, seemed to consist of the right labium and nympha, enormously hypertrophied, the adjoining parts being also implicated in the diseased mass, and forming one irregular tumour extending across and completely overhanging the orifice of the vagina. Its superior surface was covered with skin, which was endued with very little sensibility, its under surface was lined with mucous membrane continuous with that of the vagina. The skin covering the mons veneris also participated, to a certain extent, in the disease, being thickened and nodulated.

"The clitoris could not be distinctly made out, but I believe it was included in the general mass of disease; the tumour I remarked occupying its position, and there being one point on its under surface which was slightly sensitive. The patient stated that ten years ago she suffered so intensely from pruritus as to be obliged to tear herself, in her efforts to obtain relief, which were, as is usual in such cases, ineffectual. Modesty prevented her seeking professional aid. At the period she declares no swelling whatever existed. At last, after enduring great torment for two years, she spoke to a nurse-tender, who procured a wash for her, which only aggravated her sufferings by causing great pain, followed by inflammation; from this period we may date the commencement of the growth of this large diseased mass. At first the tumour only attracted notice after

she had been engaged in a hard day's work, and would nearly disappear before morning; but gradually, though very slowly, it increased in size, and her sufferings were augmented in proportion until at length walking or standing gave rise to such intense pain that she was obliged to give up all thoughts of earning her bread, and in this state she applied to me.

"From the first I decided that any palliative treatment would be useless; and as she expressed herself ready to undergo any operation which afforded her a prospect of relief, I told her I would undertake it, and brought her into hospital. Dr. Beatty and Dr. Churchill, who saw the case, fully concurred in this opinion, the only question being what was the more preferable operation; for severe hemorrhage was to be dreaded from removing so large a tumour from so vascular a part. After some hesitation, therefore, we decided to use the écraseur, the patient being first brought fully under the influence of chloroform.

"I commenced the operation by piercing the centre of the mass with a bistoury, along the blade of which I passed a probe attached to the écraseur by a strong ligature, by means of which the chain was drawn through the wound: the object of this step was to enable one-half of the tumour to be removed first, for the entire mass was so large and so irregular in shape, that it would have been impossible to include the whole at once. The instrument being adjusted, I proceeded to cut through the lower segment first; it took nine minutes to accomplish this. The instrument was then readjusted so as to include the upper portion, the removal of which occupied seven minutes more, the whole period during which the écraseur was worked being sixteen minutes, and from first to last the operation occupied twenty minutes,—a long time, no doubt, but then the patient, being under the influence of chloroform, suffered no pain, and I do not think there were two drachms of blood lost; the surface of the wound was clean and even, and no ligature was required; after the operation a light water-dressing was applied, and the patient left quiet. For some hours subsequently she complained of severe pain in the part; this gradually subsided towards evening; a full opiate was administered, and she passed a quiet night; slight superficial sloughing from the surface of the wound followed, but she recovered without a bad symptom; the pulse never rose above 80. She went out in about a fortnight, quite well. I saw her the other day. She is now in a situation, and states that she suffers no inconvenience whatever. The instrument I used was one Mr. Collis has operated with several times, and on each occasion with success. I think, from what I have seen, that the écraseur is well adapted for removing tumours, &c., from parts from which much hemorrhage is to be dreaded; but certainly I would not venture to use it unless the patient were fully under the influence of chloroform, as the suffering would be so great, and the time occupied by the operation so considerable."

TRANSACTIONS OF THE COUNTY AND CITY OF CORK MEDICAL AND SURGICAL SOCIETY.

(*Continued from* vol. xxiii. p. 487.)

SESSION 1856-57.

March 25, 1857.

Dr. R. Corbett, Vice-President, in the Chair.

Hypertrophy of the Heart; Aneurism of the Ascending Aorta.—Dr. Finn exhibited pathological specimens of the above diseases:—

Thomas Deluary, a labourer, aged 36, of short stature and stout conformation, was admitted into the North Infirmary on the 11th March, 1857. About a year previous to this date he had been treated for apoplexy and hemiplegia in the workhouse hospital. After submitting to treatment for a fortnight in that institution he was dismissed, much improved in health, but still complaining of a sense of numbness in the left hand and arm. During the past winter he was again admitted into the workhouse hospital for palpitations and dyspnœa, and after leaving was received into the North Infirmary, on the recommendation of Dr. O'Flynn of this city, under whose care he had been for a short time.

The symptoms on the occasion of his admission to hospital were as follows:—Face and neck œdematous; turgescence of the jugulars and of the subcutaneous veins immediately beneath the clavicles; the former were pulsatile, particularly at the right side. He complained much of headache, which was greatly aggravated by decubitus on the left side, paroxysms of coughing having been induced by this position. His habitual decubitus was on the right side. There existed the physical signs of general and capillary bronchitis. The area of cardiac dulness was much extended, and a loud murmur was heard over the region of the heart generally, loudest at the apex. A murmur was also propagated along the ascending aorta as far as the commencement of the arch, at which point it presented its maximum intensity. This murmur differed from the preceding in being louder and rougher in its character. Death took place quite suddenly on the 25th of March.

Autopsy.—On exposing the lungs a small quantity of serum, slightly tinged with blood, escaped from the cavity of the right pleura. The right lung was generally adherent to the costal pleura; the attachments presented varying degrees of firmness, those corresponding with the third and fourth ribs offering the greatest amount of resistance to separation. The right lung, anteriorly, was solid and indurated; its surface was pale, and a section of the interior exhibited a corresponding appearance; in the posterior and dependent parts there existed considerable congestion. Several large

clots were discovered in the left pleura; these clots appeared to have been derived from a breach of surface in the venous trunk. The pericardium, which had been the seat of recent inflammation, was united to the heart; the medium of union, however, was very soft, and easily broken up. The heart was hypertrophied, and weighed twenty-four ounces; the mitral and aortic valves were much congested, and swollen to such an extent as to present a serious impediment to the movement of the blood through the left side of the heart; yet there existed in either no structural change calculated seriously to interfere with the occlusion, more or less complete, of their respective orifices. Immediately above the aortic valves the arterial canal abruptly widened into a large sacculated aneurism, extending to the commencement of the arch, but which more particularly involved the posterior aspect of the vessel. In the sac no fibrinous coagula were discovered, nor had perforation or rupture of its walls occurred.

Remarks.—This case presents a rare example of thoracic aneurism merely playing a mediate part in terminating life, as the fatal result in this instance must be referred either to the breach of continuity in the venous trunk, or to a recurrence of the cerebral symptoms, from which this individual previously suffered[a]; which symptoms may have been easily reproduced by the assemblage of pathological changes affecting the thoracic viscera, as above noticed. The murmur heard over the site of the aneurism probably owed its existence to the abrupt *détour* of a considerable portion of the blood-wave towards the posterior part of the sac. The frequent, if not habitual absence of a bellows murmur, in aneurisms occupying the ascending aorta (in which fibrinous coagula have been largely deposited), would suggest some relation at least between the empty condition of the sac and the murmur developed in this instance.

April 8th, 1857.

Dr. Finn, President, in the Chair.

Dr. S. Henry Hobart read a report of the two following cases of *Tetanus*[b]:—

Case I.—John O'Neill was admitted into the North Infirmary, February 10, 1853, for a contused wound of the foot; the injury had been received by a heavy beam of timber falling on the part; several of the metatarsal bones and phalanges were fractured, and the soft parts severely lacerated. 13th. The three larger toes appear gangrenous, and this condition extends to the middle of the metatarsus, where a line of demarcation is beginning to appear.

[a] It is to be regretted that the brain was not examined; it was only by the intervention of a police constable that permission was obtained to examine the thoracic viscera.

[b] He also made some remarks on the subject of amputation, &c., in this disease, and on the use of chloroform, nicotine, the wourali poison, in it, which are published as an original communication at page 133 of the present Number of this Journal.

17th. Line of separation well marked; toes quite black. 21st. The sphacelated parts have separated, leaving a perfectly healthy ulcer. 22nd. Complains of stiffness of the masseter muscles, with pain extending to the back of the neck; he was directed to take three grains of quina three times a day. 23rd. Stiffness of muscles has increased, but he can still open the mouth pretty well, and is not affected with spasms; to continue the quina. Towards evening he got some twitches of spasm in the back of the neck. 24th. Decidedly worse. Spasms becoming more severe, affecting the back of the neck, and, to a slighter extent, the muscles of the back. On administering chloroform the muscular contractions were greatly diminished, but not entirely relieved; the action of this anæsthetic was now kept up, with the effect of almost entirely preventing the return of the tetanic convulsions; but on stopping its administration they quickly returned, as sensibility became restored. 25th. Seems in much the same state as yesterday; had little or no spasm since, the action of the chloroform having been constantly kept up, and requiring to be renewed at intervals of an hour or three-quarters of an hour. The moment he begins to recover consciousness he becomes eager to have the chloroform readministered, while, at the same time, the convulsions reappear. 26th. 10 o'clock A. M. Had a good night, but required more frequent administration of chloroform; considers himself better. 2 P. M. Appears weak, and, on stopping the inhalation, spasms almost immediately return. 8 P. M. Respiration much impeded by a quantity of mucus which has collected in the bronchial tubes, particularly in those of the right lung; from the commencement of the attack he has had considerable difficulty in coughing up the mucus from the lungs, for he appears to be unable to close the opening of the glottis so as to give a regular cough, and the only way he can effect the purpose is by a powerful expiratory effort. 27th. Had a very violent attack of spasm during the night, though the chloroform was steadily persevered in; by this attack he was nearly suffocated, and after it appeared greatly exhausted. 7 o'clock A. M. The convulsions returned with increased violence, the face became quite livid, and the respiration, already very difficult, was now almost completely arrested, and death ensued, apparently more from the impairment of this function than from the violence of the convulsions. He had been just three days kept constantly under the influence of chloroform, of which he used twenty-eight ounces; but of this, of course, a good deal was lost, as it was administered by pouring it on a handkerchief and holding this over the nose. It had the effect of greatly diminishing the violence of the spasms, though not of entirely arresting them; it also changed the patient's condition from one of the frightful agony usually experienced in tetanus to that of an almost constant slumber; and even if the mortality of the disease were in no way lessened, nor life prolonged a single hour, by the use of the agent, it must be admitted that its relieving the patient from so much suffering is in itself an immense boon; but, moreover, it can scarcely be denied, that the very fact of allaying severe pain,

and arresting those violent convulsions, must tend materially to prolong life by husbanding the patient's strength, and this additional length of life would give us the greater hope that the disease might finally exhaust itself, and complete recovery ensue. In the present case, too, swallowing was comparatively easy (no doubt from the spasmodic condition of the muscles of deglutition being relieved by the same agent), as the patient was able to take about three pints of good beef-tea daily, and even some portions of meat, cut up very small, floating in the soup. It should be mentioned that this man got, on the 24th, ten grains of calomel, followed by senna mixture, which operated freely, and that, during the remainder of the case, a moderate degree of diarrhœa continued, showing also an advantage that chloroform has over opium, that it does not constipate the bowels. This case, however, shows that chloroform, however useful, on the one hand, in allaying the more violent symptoms of the disease, is not, on the other hand, unattended with danger of its own, as the long-continued inhalation of the vapour must be highly calculated to cause congestion of the bronchial membrane, and indeed, I have little doubt that in the case before us, death was mainly caused by the effusion which took place in the lungs, and that, had this been permitted to go on for a few hours longer, it would have terminated the patient's life altogether independently of the original disease[a].

Case II.—A second case of tetanus occurred in the hospital a short time after this, of which, however, I have not kept a record. It arose from a very slight wound on the dorsum of the foot, was also treated with chloroform, and ran an almost similar course to the last, though, as death occurred at an earlier period, the bronchial symptoms were not so marked.

Case III.—For the following notes I am indebted to my friend, Mr. O'Keeffe, one of the students of the hospital, and now Librarian to the Queen's College, who acted as dresser, and paid very close attention to the case.

"Mrs. Deasy, aged about 40, the wife of a farmer near Frankfield, was admitted into the North Infirmary, July 1, 1855, under my father's care. On the day previously she had fallen off a ditch, some three feet high, by which she sustained a compound fracture

[a] These remarks on the use of chloroform were made at a time when the continued inhalation of its vapour was much less practised than it has since been. Subsequent experience has shown that, in cases of labour, it may be administered for days together without any ill effect; still, the two cases are not perfectly analogous, as in labour a complete state of insensibility is not necessary to be kept up for a long time together, while in tetanus, as we have seen in the foregoing case, the moment the patient recovers sufficient consciousness to cough up the mucus from the lungs, the convulsions return, and equally interfere with the same function. Thus a quantity of fluid which would, under other circumstances, be got rid of by expectoration, gradually accumulates, and, being saturated with chloroform vapour, must tend to increase the irritation; and we might fairly expect that an increased secretion would occur as an effort of nature to wash away the offending matter.

of the leg; the extremity of the upper fragment of the tibia protruded considerably, and the overlapping of the bones was very great. Every effort was made at reduction, the woman being under the influence of chloroform, but it was found impossible to place the broken ends *in situ;* the tendons of the tibialis posticus and other muscles had slipped from their groove behind the internal malleolus, and appeared to increase the tendency to displacement of the bones; it was accordingly deemed necessary to remove a portion of the upper fragment, after which reduction was easily effected; warm dressing was applied to the wound, and the limb, surrounded with a many-tailed bandage, was placed in a fracture apparatus, provided with a foot-board. Pulse after the operation 90°, but feeble.

"3rd. Patient restless from pain and want of sleep; pulse 84; leg somewhat swollen and œdematous; dressing not removed.

"4th. On removing the dressing, a small quantity of a yellow fluid, of the consistence of serum, escaped, which was probably synovia; leg much swollen; same dressing applied, and covered with a poultice.

"5th. Dressing to be removed twice daily; the margins of the wound beginning to take on a healthy action; centre of wound covered with sloughs; patient gets no sleep, and is a good deal annoyed by spasmodic twitching in the affected limb, principally in the toes.

"6th. A considerable slough came away to-day with the dressing; patient slept well last night, the first time since the leg was put up; seems to be going on very favourably; limb rather tense and swollen; wound discharging healthy pus.

"7th. Complains of stiffness of the neck, and difficulty of swallowing; in other respects doing very well; wound beginning to granulate; exposed portion of bone white and deprived of periosteum; patient slept well last night; dressing as usual.

"8th. Complains of not being able to open her mouth fully; a considerable quantity of unhealthy matter from the wound; up to this period there was no marked symptom of trismus, not the least appearance of the tetanic expression of countenance, and the slight stiffness complained of appeared to be more attributable to rheumatism.

"9th. Trismus is now more decided; she cannot separate the jaws more than three-eighths of an inch; when she endeavours to separate them more, the lower is drawn backwards instead of downwards, still there is merely tonic contraction; no appearance of spasm; nothing remarkable about the wound; leg much swollen and tense; pulse 90, feeble; wine, 3oz. daily.

"10th. Trismus continues; the cramps complained of in the toes of the injured limb have continued, and they have now extended up the limb to the hamstrings; there are also slight spasms of the sterno-mastoid muscles at intervals; but the contraction of those muscles and of those of the limb are materially different; the latter being very irregular in their occurrence, principally caused by dis-

turbance of the limb, particularly the dressing, but, though causing great suffering while they last, the muscles are completely relaxed in the interval, while the former are never relaxed, and the paroxysm of contraction comes on at somewhat regular intervals; pulse quick; to get as much wine and beef-tea as she can take.

"12th. Tetanic symptoms more aggravated; the cramps about the neck are much increased, and are aggravated under any excitement, and they became so severe during the dressing of the wound, and the spasms in the limb so distressing, that it was deemed advisable to place her under chloroform; this, however, had not the desired effect, as the first stage of chloroform anæsthesia (that of excitement) appeared to predominate greatly. Indeed, she seemed altogether insusceptible of the stages of relaxation or of collapse, for, though it was very freely administered, it only caused powerful contractions of all the voluntary muscles; the sound limb was drawn upwards and rigidly flexed; the arms were extended, and the hands convulsively grasped at those who stood near; the muscles of the abdomen and thorax became particularly tense and firm; the sterno-mastoid stood boldly forward, and the patient was drawn into a position between sitting and lying: this was the first time the convulsions had become general, but as the effects of the chloroform passed off she returned to about the same condition she had been in before its operation, but during the remainder of the day the spasms of the limbs were most distressing, so that the woman longed for death. 9 o'clock P.M. No better; to have a drachm of tincture of opium, and this to be followed by twenty minims every two hours until she sleeps.

"13th. Fell asleep at 1 o'clock, but on awaking was seized with a fit similar to that of yesterday morning; patient is now decidedly worse; convulsions more violent; the jaws more firmly closed; she is scarcely able to swallow, and any attempt to do so brings on violent convulsions of all the muscles about the head and neck, particularly of those of deglutition. She was directed to take a drachm of tincture of opium every four hours until sleep would come on, the effect being watched.

"14th. Patient's condition truly appalling; she is unable to swallow anything; refuses to attempt even the laudanum; her only food for the last two days has been two eggs beaten up, with a little wine. She is very weak, and sinking fast.

"15th. Died at 9 o'clock, A.M.; convulsions continued unabated to the last; her intellect was never affected."

April 22nd, 1857.

Dr. Corbett, Vice-President, in the Chair.

Compound Presentation of Face and Arm.—Dr. Harvey gave the following particulars of the above case:—"I lately attended a lady in her third confinement, with twins; the first child, a boy, presented naturally, and was born after a good labour of three hours. In the

second case (a girl), the face presented in what is usually termed the second position, with the left cheek towards the os pubis. Having ascertained how matters stood, and knowing the pelvis to be roomy, I determined to leave the case to nature. On a subsequent examination, however, finding the shoulder very near, and the humerus almost immediately coming within reach, and these advancing, while the head made but little way, I requested á consultation, so as to be prepared for early turning in the possible event of the case being converted into an arm presentation. During a few successive pains I endeavoured to keep the shoulder back, and the head again advanced, and before the arrival of my friend Dr. Finn, the case had declared itself a face presentation, complicated with descent of left arm. The hand was now at the os externum, and the head and arm became arrested in their passage through the pelvis; and as the patient was feeble, and the uterine contractions had slackened, it was deemed prudent to apply the forceps, passing the pubic blade between the arm and head. This was done without difficulty, and the delivery completed. The head of the child was deeply indented by the pressure of the protruded extremity, and to this its death appeared attributable. Considerable relaxation of the uterus and post-partum hemorrhage ensued."

May 13th, 1857.

Dr. Finn, President, in the Chair.

Case of Recovery from Ruptured Uterus.—Dr. Harvey prefaced this case with the following observations: —

"Since the highly important communication of Dr. Stokes on the free exhibition of opium in inflamed peritoneum from the escape of fluid into its cavity[a], the practice seems to have been recognised and adopted as the means best calculated to afford a chance of recovery in many cases which would be otherwise considered hopeless; and it has been extended in the hands of others even to cases of simple peritonitis, in which the usual means seemed inadmissible. Amongst other casualties in which the same treatment was suggested by the eminent author of the paper above alluded to, rupture of the uterus was enumerated. I am not aware of any case having since been recorded in which that suggestion has been fully acted upon[b]. The following particulars of a case in which it was put in practice I give more in detail than might otherwise appear necessary, both because it appears to me to contain several points of interest, and because I am desirous that the relations of the symptoms to the means adopted may be fully seen throughout.

"Even though the present case should not be looked upon as a *recovery*, it still affords as much encouragement for further trial of

[a] Dublin Journal of Medical Scienee, First Series, vol. i. p. 125.

[b] A case related by Dr. Murphy at the Obstetrical Society of Dublin, in February, 1839, can scarcely be considered an exception to this remark.

the plan as the case which was the occasion of its introduction by Dr. Stokes. Both would probably have terminated favourably in the end but for circumstances in which the peculiar treatment had no part.

"The tendency constantly shown in disease, to proceed to a certain termination, in many cases almost irrespective of treatment, and the fact of recoveries constantly taking place under circumstances the most opposite, are sufficient to induce great caution in attributing special results to any individual remedy, or line of treatment, unless there be something more than the simple appearance of cause and effect from which to draw our conclusions. But there are certain conditions connected with the operation of remedies, which may, perhaps, be considered as in some degree establishing their absolute service in particular cases. Among the chief of these is a tolerance of the remedy which does not exist under other states of the system,—the absence of its known injurious effects, and the non-disturbance of the functions generally under its use. This tolerance seems to argue the existence of a pathological condition upon which it depends, and which is the foundation of the applicability of the remedy; and upon this, it would appear, also depends the *therapeutic*, as contradistinguished from the *physiological* action of medicines. Thus, blood-letting practised on a person in health produces injurious effects, even where carried to a small extent; whilst benefit follows a much larger detraction when the morbid condition requiring it is present, and *un*accompanied by its usual deleterious effects. A glass or two of wine, which, if taken by a female under ordinary circumstances, would cause heat and fulness, and considerable disturbance of pulse, will, in a paroxysm of neuralgia, produce no sensible effects beyond a relief to present suffering, and a general equalization of the circulation. The tolerance and good effects of the means used in these cases are found mutually to confirm or correct each other, and occasionally also serve, in some degree, to assist in determining a doubtful diagnosis. If the pathological condition indicating the use of the remedy be not present, deleterious results are visible: if, on the contrary, it do exist, then the physiological effects will remain latent until that condition is neutralized. Principles somewhat similar might, perhaps, be laid down with regard to tonics and stimulants in the neuralgic and other conditions of the system.

"That which seems to call for, or admit of, the exhibition of opium in high doses, is a state of *collapse*, resulting from a severe *shock* to the system, or *exhaustion with irritability*, or *both;* though it may not be very easy to determine the abstract causes essentially constituting the conditions demanding the particular line of treatment in the different states alluded to. More than that inflammation is to be met by blood-letting; and something different from simple debility is involved in both the conditions, which may severally require a tonic and stimulant, or an opiate treatment.

"Mary Murphy, aged 38, a spare but healthy-looking woman,

was admitted into the Lying-in Hospital, stated to have been in rather strong labour of her third child for the last thirty-six hours; former labours reported to have been natural, and of about nine hours' duration. When seen at 2 o'clock P. M., the pains were strong and frequent, and she felt debilitated. Pulse about 100, weak; bowels confined; no difficulty in passing urine; the head was found occupying the upper part of the cavity of the pelvis; presenting part œdematous, and making slow advance; liquor amnii had been dribbling away since the day before. She was ordered a turpentine enema and some broth. On being suddenly summoned, about 7½ o'clock in the evening, we found the woman in a state of great prostration; the pains had ceased, and the pulse was exceedingly rapid and weak; the head of the child had receded out of reach of the fingers, a large globular tumour was felt in the epigastrium, and there was already some abdominal tenderness. She was not conscious of any sudden change of movement having taken place. It appeared that she had a severe fall, with a basket of bread on her back, some weeks before.

"On consultation with Drs. Finn and Tanner it was determined to attempt delivery by turning. This was easily accomplished, all being loose in the cavity of the uterus, the fœtus still remaining partially within it, its head lying in a lax pouch over the os pubis. There being some difficulty in extracting the head, it was perforated behind the ear, and delivery thus accomplished. The placenta followed readily, and there was little hemorrhage throughout. It was considered advisable that I should reintroduce my hand, with a view to free any intestine that might have got engaged in the wound, when I discovered a large oblique rent in the right side of the fundus, situated anteriorly, at least three inches in extent; my fingers passed freely into the peritoneal cavity.

"The patient was very much exhausted after the operation. The pulse was then 124, small and weak; surface perspiring, but not cold. There was none of the brown vomiting frequently observed in such cases. A moderately tight bandage was applied, and she was ordered to take two grains of opium immediately, and one grain every hour afterwards; to have arrow-root and weak tea.

"We desired that we should be sent for if she were alive at 7 o'clock in the morning.

"Second day, 8 o'clock A. M. A quiet night, but had little sleep; countenance not much sunken; abdominal tenderness rather increased; pulse 100, soft; tongue moist; has passed water. Powders regularly taken up to 6 o'clock.

"2 o'clock P. M. Has been dozing a good deal; tympanitis and rather more tenderness; pulse 104, soft, but rather fuller; respirations 18; refers all her uneasiness to the epigastrium. Twenty leeches to the abdomen, to be followed by fomentations, and afterwards a large poultice. Powders continued.

"8¾ o'clock P. M. Has continued to slumber occasionally, but is easily aroused, and perfectly collected; considerable relief from

the leeching; tympanitic distention rather increased; countenance better. Has taken a good deal of arrow-root. No vomiting; urine freely passed. No powders have been taken since 3 o'clock, owing to a mistake. She is to take one grain of opium every second hour, and half a drachm of mercurial ointment is to be rubbed into the arms every eighth hour.

"Third day, 8 o'clock A. M. Slept a good deal; some vomiting of grass-green fluid this morning; lochia natural; pulse 108, soft. The powders to be continued every fourth hour; cataplasms and mercurial ointment to be continued.

"9 o'clock P. M. Occasional vomiting still; tympanitis and tenderness rather diminished; lies on both sides sometimes; urine free.

"Fourth day, 11 o'clock A. M. Some sleep, but countenance a good deal sunk this morning, with dampness and diminished warmth of skin; pulse 120, weaker; was allowed to indulge too freely in drinks, and has vomited considerably more in consequence. A blister to be applied to the abdomen, and if the vomiting continue in the evening, an injection of broth, with half a drachm of tincture of opium, to be administered; to take a dessert-spoonful of chicken-broth every half-hour.

"9 o'clock P. M. Vomiting has ceased, tenderness and tympanitis perceptibly diminished; countenance improved; pulse 116, stronger; lochia have disappeared; dislikes her powders. To have the following pills:—Opium, twelve grains; extract of hemlock, a scruple, to be divided into twelve pills; one to be taken every third hour; the cataplasms and mercurial ointment to be continued; and to have an increased quantity of broth.

"Fifth day, 11 o'clock A. M. Night restless, and yet her countenance is improved; no appearance of mercurial action; blistered surface dressed with a drachm of mercurial ointment; frictions discontinued; pills to be continued.

"9 o'clock P. M. Puffing and tenderness less than at any time during her illness; complains slightly of her mouth; continue treatment.

"Sixth day. Three full, free, feculent evacuations; pulse 100, rather weak; tympanitis nearly gone; broth given more freely; biscuit with milk; the pills continued.

"Seventh day. Bowels free; tongue clean; little tenderness, except in the neighbourhood of the rent; pills to be omitted, and the following draught to be taken at night:—Battley's sedative liquor of opium, twenty minims; camphor mixture, eleven drachms; syrup of orange, a drachm: mix.

"Eighth day. Slept well; no pain; tenderness nearly gone. Is tired of broth, tea, and biscuit; an egg beaten up with a dessert-spoonful of wine, as often as four times in the twenty-four hours.

"Twelfth day. Has continued to improve, with slight variations, during the last four days; debility now appears to be the only source of complaint. Has continued her draughts of Battley's solution, and her wine. The following pill to be taken every fourth

hour:—Sulphate of quina, two grains; extract of gentian, two grains and a half: mix.

"Evening. Pressing hard to be allowed home, and feigning inability to speak except when she wants to urge her point; bowels rather freer. Pills to be continued, and an opiate enema to be administered at night.

"Thirteenth day. Has obstinately refused her wine and pills since 6 o'clock last evening, and would not submit to the enema, notwithstanding which she has had a pretty good night; tongue natural; pulse 96, of fair strength. Discontented and difficult to manage all through her illness, she now resolutely refuses all nourishment and medicine, though told her recovery will as certainly follow compliance, as death must the contrary.

"9 o'clock P.M. In the afternoon, about 3½ o'clock, was induced by the priest to take some broth and a pill; she is, notwithstanding, evidently sinking to-night; the extremities are cold, and the pulse can scarcely be felt; she is perfectly collected, and keeps to her resolution.

"Fourteenth day. Died about 4 o'clock this morning.

"*Examination*, sixteen hours after death.—A very hurried and unsatisfactory examination was, with great difficulty, obtained by candle-light, in the presence of her father and mother. There was no distention of the abdomen; intestines in the neighbourhood of uterus were extensively agglutinated to it, to each other, and to the abdominal parietes, by lymph in process of organization; a few small sacculi, formed by lymph inclosing spots of half an inch to an inch in diameter, where the intestines did not touch the parietes, contained purulent matter, but the quantity, in all, was by no means great; uterus about two inches and a half or three inches in diameter, adhering, on all sides, more or less to the neighbouring viscera; the rent, occupying right side of fundus, appeared to have closed throughout the whole of its length within, and through about two-thirds of the substance of the uterus from within outwards; externally it had the appearance of a granulating, incised wound, which had not been evenly closed in the first instance, pouting a little towards the peritoneal surface; its length now appeared about an inch, or perhaps a little more, say two-fifths, of the diameter of the uterus.

"It was, of course, impossible to procure the specimen for preservation.

"The circumstance most worthy of attention in the foregoing case is the fact, that though leeching, mercurials by the skin, and fomentations, were availed of as *auxiliaries*, the main treatment was the full exhibition of opium, so as to keep the patient continually under its influence. The quantity taken was large,—fifteen grains in the first twenty-four hours, and fifty grains in all during the first week of her illness, besides a considerable quantity afterwards, in various forms,—and yet, during the whole period, none of the poisonous effects of the remedy were observed; no narcotism, no deli-

rium; in fact, there was entire absence of cerebral disturbance, or of any of the unpleasant consequences which so frequently follow from a grain or two taken under other states of the system. The bowels, after a slight interruption, acted fully and freely, and the urinary and cutaneous secretions were natural throughout. But for the dogged obstinacy of the woman herself, there seems little doubt but that she would have added one to the still small list of recoveries from ruptured uterus; the case was still sufficiently successful, however, to show the value of opium in such cases; its sustaining and quieting effects gave nature the opportunity to make the effort at reparation which could scarcely have been effected otherwise.

"Persons not unfrequently sink without a rally under the shock consequent upon great and extensive injuries. Might not opium, given on the principles advocated above, afford such patients a chance of reaction, and ultimately of restoration?"

On Acute Atrophy of the Lungs. By Professor Buhl, of Munich.

I very recently had occasion to examine the bodies of three individuals dead of typhus fever, the condition of the lungs in whom appears to me to be of special interest. It, in fact, confirms in a certain respect, and enlarges the opinion I previously expressed[a], which was based on only a few observations, that a morbid process analogous to acute Bright's degeneration of the kidneys occurs in the lungs; that this, as an inflammatory process, must be distinguished from croupy and tubercular pneumonia; and that this desquamative pneumonia, as I proposed to call it, during acute exanthematous disease, typhus, &c., occurs in the period of specific morbification. In this paper I pointed out that solution and fatty metamorphosis, with more or less condensation and colouring of the pulmonary tissue, might be regarded as perfect or imperfect reparative processes of the acute inflammatory condition of the lung.

The three dissections above alluded to afforded examples of a third and unfavourable termination.

In all three cases death occurred between the fourth and the sixth week from the commencement of the disease, and therefore in the period of the secondary processes after the disappearance of the proper typhus; dissection in each case revealed considerable hypertrophy of the brain, and in addition, in two instances, swelling of the spleen and of the mesenteric glands in a state of retrogression, the ileum with flat edged, more or less united, ulcers extending to the muscular coat; once, on the contrary, there was a relapsing, pale, medullary swelling of the edges of the ulcers already existing in the

[a] Report on 280 dissections. Henle and Pfeufer's Journal für rat. Med. Neue Folge. Bd. viii. Heft 1, page 80, &c.

clusters of Peyer's glands, with fresh exfoliation of the same, fresh tumefaction of the spleen and mesenteric gland; in this case there was also a larnygeal ulcer denuding the arytenoid cartilage.

The pulmonary pleura was never directly adherent to the costal; on the other hand, I twice found a circumscribed adhesion by means of fibrinous exudation; the parts of the pulmonary tissue subjacent to the latter exhibited at one time pulpy foci, of gangrenous odour, from the size of a pea to that of a hazel-nut,—once in the inferior lobe of the right lung, once in the upper lobe of the right, and in the lower lobe of the left lung; at another time the greater part of one lobe was gangrenous, as was in one example the superior lobe of the left lung; in the latter case several of the corresponding branches of the pulmonary artery presented secondary thrombi, not caused by emboli. Besides these destroyed portions, the tissue of the affected lobe of the lung presented complete absence of air, an unusual flaccidity, with considerable infiltration, a smooth surface of section, a generally brownish-red discoloration mixed with something of gray, which latter was in some lobular portions predominant; a lobular more or less dense consistence, and, what was in each case most striking and significant, a considerable cylindrical dilatation and reciprocal approximation of the finer bronchi unprovided with cartilages, with a dark livid redness of their mucous membrane.

Lobular condensations void of air, from the size of a pea to that of a cherry, were found in greater or less number also in the other lobes of the lungs, in the midst of aërated and merely œdematous tissue.

In the two cases of pleural fibrinous exudation, there lay in most of the finer, but, as has been remarked, dilated bronchi belonging to the gangrenous foci of the pulmonary parenchyma, croupy plugs, which once were continued into the larger branches as loose investing croupy membranes. The gangrenous foci lay chiefly along the plugged bronchi, and in parts embraced the entire tube.

Microscopic examination showed, when the tissue of the lungs was investigated step by step from the lobular, unaërated, condensed parts into the pulpy masses, that the chief alteration lay in the epithelium, as in it the simple dark filling with fine granules could be traced up to complete molecular destruction, whereby lastly the fine granules were either still accumulated in the form and arrangement of the earlier cells, and the little clusters continued grouped together, or with total obliteration of the contours of the cells only undefined molecular masses were to be seen. Fungi or infusoria were not observed in these masses. Of fibrinous plugs, pus in the pulmonary tissue, as well as of cellular formations, like those seen in the gelatinous infiltration around the yellow dry lobules in tuberculous pneumonia, no trace could be discovered. It is therefore evident that we had to do neither with tubercular nor with croupy pneumonia.

In estimating the foregoing observations, two points appear to be

pre-eminently of essential and characteristic importance:—1. The cylindrical dilatation and reciprocal approximation of the finer bronchi in the flaggy, unaërated, infiltrated pulmonary parenchyma; 2. The more or less complete molecular destruction of the epithelial investment of the air vesicles.

Both points present the most incontestable analogy to Rokitansky's fully formed acute atrophy of the liver. If in typhus, as I endeavoured to show in the Report above quoted, only the early stages of acute atrophy are usually found, the same is likewise the case with the lungs; while the slighter degrees of the pulmonary affection just described, that is, of desquamative pneumonia, are not so rare in typhus, its highest degree, the acute atrophy of the lungs, as I think I must call the affection in question, is of extreme rarity.

There can be no doubt we have really to deal with atrophy of the pulmonary parenchyma; the destruction of the pulmonary epithelium is unmistakable; the areolar tissue is filled with it and its molecular remains, as well as with some albuminous fluid; through expulsion of the air it is collapsed, atelektatic, and even if in no case an old pleural adhesion was present, still the force of the physiological adhesion of the costal and pulmonary pleura is so great, that under the above described decrease of volume of the pulmonary parenchyma and its simultaneous inaccessibility to air, it is able to overpower the walls of the bronchial ramifications, and to dilate their caliber. The cylindrical dilatation of the bronchi is explicable in no other mode.

The only possible difference between acute atrophy of the lung and acute atrophy of the liver consists in this, that in the former, in consequence of the action of the atmospheric air, the destroyed masses, with their fibrous superstructure, will be subject to complete softening and putrefactive decomposition, and therefore the pulpy, gangrenous foci will be chiefly situated around and along the bronchi, and the croupy affection of the bronchial mucous membrane and the pleuritis are to be regarded as further consequences of the same.

Acute atrophy of the lung, combined with pulpy destruction, may further represent a form of pulmonary gangrene, which, at least on the dissecting-table, must be distinguished from other forms of mortification of the lungs.

The coincidence of a relapsing tumour in the spleen, Peyer's and the mesenteric glands, with complete acute pulmonary atrophy, which latter represents a period of about four weeks, is also not without interest.

As I have already done in my Report above quoted, I forbear for the present to identify the desquamative pneumonia and its higher degrees, acute pulmonary atrophy and its consequent gangrene, with morbid conditions of texture, possessing, according to the description of other observers, analogy with them, and to which the synonym should be given only after fresh investigation. But I consi-

der a revision and more accurate examination of the several inflammatory processes in the lung to be a not unimportant desideratum in pathological anatomy.—*Virchow's Archiv*, 1857. Band xi. Heft 3, p. 275.

On a Peculiar Cavernous Degeneration of the Muscular Substance of the Heart. By Dr. C. Skrzeczka.

In August of last year Dr. Reichel, in performing a medico-legal post-mortem examination, found the heart, which shall presently be more particularly described. He sent it, on account of an adhesion of the two laminæ of the pericardium, to Professor Rathke, from whom, through the kindness of Professor v. Wittich, I obtained it for more exact investigation. Of the history of the case Dr. Reichel communicated the following.—

A strongly built peasant lad, aged 21, stated to have been previously in good health, was chased by a shepherd's boy twelve years old, caught, and thrown on the ground. At the same moment he gave a few rattles in his throat, and died. On post-mortem examination, the face was bloated, the abdomen swollen, the entire body livid, and covered with a network of blue transparent cutaneous veins. Putrefaction was already perceptibly advanced. Externally there was no trace of injury or malformation, except some cicatrices on the joints of the foot and on the right clavicle, apparently the result of former scrofulous ulcers. In the head there was a great accumulation of dark fluid blood in the veins and sinuses; at the base of the skull and in the canal of the spinal column were collections of bloody serum. There was total, firm, and membranous adhesion of the left lung to the costal pleura. The right lung presented some filamentary attachments to the pleura costalis. In the right pleural cavity were fully six ounces of black, thin, fluid blood. Both lungs, especially the left, were overloaded with dark red blood. The pericardium was firmly adherent to the left pulmonary pleura.

It was fully proved, in answer to subsequent repeated inquiries, that the deceased had never suffered from thoracic inflammation. The heart was preserved in spirit until the middle of November for further examination.

The heart, with the origins of the large vessels, weighed 326 grammes [about 11½ ounces avoirdupois], and was of medium size. The parietal layer of the pericardium was completely adherent to the visceral; between them were calcareous depositions in the form of hard plates of various sizes. On opening the left ventricle at the left edge of the heart, the section of its wall presented a very peculiar appearance. It perfectly resembled the section of a fine bathing sponge, and corresponded nearly to the representations Brücke has given of the cavernous hearts of amphibious animals. Close together lay little cavities from the size of a pin's head to that of a small bean, separated from one another by the yellowish-brown muscular

substance. The larger cavities lay externally, the largest almost immediately under the pericardium. Many of the latter were imperfectly divided into several cells by fine membranes and filaments passing from one wall to the other. The cavities were filled with spirit, and, when this ran out on section, were perfectly empty. Only one of the cavities lying close under the pericardium contained some coagulated blood, the dark colour of which was visible through the pericardium. No proper membrane lining these little cavities could anywhere be demonstrated; they represented only gaps in the muscular substance. In the neighbourhood of the sulcus circularis was, in the muscular substance, a yellow spot about the size of a pea, about half a line under the pericardium, bounded and distinguished from the surrounding parts by tolerably sharp outlines. Further sections through the muscular substance showed that the entire of the left ventricle was degenerated in the same manner, as was the septum ventriculorum. The wall of the right ventricle was affected by the same process, though in a much less degree, nor were the papillary muscles of the left ventricle entirely free.

The valves were all normal, the left ventricle was somewhat hypertrophied, in other respects the dimensions of the heart were, so far as could be estimated from a preparation kept in spirit, nearly normal. The arteries contained no trace of atheromatous deposits. The coronary arteries of the heart were normal.

After a fresh section the spirit contained in one of the larger cavities was now microscopically examined, but, with the exception of fat globules, nothing was seen calculated to throw light on the probable contents of the cavity. The membranes and filaments stretched within the larger cavities consisted of wavy connective tissue, mixed with fat globules. The coagulum of blood in the one cavity above mentioned exhibited nothing particular under the microscope: coagula of fibrin infiltrated with colouring matter of the blood. The muscular structure was everywhere, especially in the left ventricle, extensively converted into fat; in consistence, too, it was extremely brittle; it was impossible strictly to separate it into fibres, small fragments of muscular bundles for the most part appearing under the microscope. The above described yellow spot contained no trace of muscular fibres, but was formed simply of connective tissue with interposed fat, the latter being present partly in a free state in little drops, and partly enclosed in large cells. In some of the latter were found fine tufts of acicular crystals.

To decide the question as to the mode of origin of these cavities, it would be important to know what had been their contents, yet it was impossible to arrive at any certain conclusion on the subject. It is not easy to imagine that the walls of the cavities could have been in contact without inner space or contents; consequently, they must have contained either a fluid which subsequently became mixed with the spirit, or, perhaps, a solid body soluble in alcohol.

Neither did I succeed in finding on record similar cases capable

of throwing light on that I have described. What Rokitansky says of cysts in the heart is not exactly in point, and equally inapplicable is Foerster's short notice of the subject. The great number of cavities makes it inadmissible to refer their origin to apoplexy (see Cruvelhier's Atlas), with subsequent reabsorption of the effused blood. One of the cavities, indeed, contained blood, but this was probably poured out into the cavity already existing.

Still less likely is it that a number of small abscesses should have formed, the pus of which was afterwards absorbed. Traces of pus should still have been found, and, besides, the man would certainly have died before so complete a reabsorption could have taken place. It appears to me that but one mode of explanation is admissible: either in consequence of pericarditis (perhaps also of partial myocarditis), which led to obliteration of the pericardium, or of some other unknown causes, fatty degeneration of the muscular structure of the heart occurred in the third form described by Rokitansky. Throughout this fatty degeneration small scattered spots of the muscular structure were completely destroyed, and the fatty detritus was either absorbed during life, giving rise to the formation of the cavities which now became filled with matter of some kind, or the fat was afterward extracted by the spirit, so that the cavities were not formed until after death. The latter explanation appears to me improbable, because, in the first place, we found a cavity filled with blood, showing that such had existed during life; and because, in the second place, fat cannot be extracted by alcohol, especially when so weak as that which is used in preparations. The yellow soft spot and the muscular structure of the heart, which we might regard as an early stage of the supposed process, is also in favour of the explanation I have given.

In weak states of the heart, such as was undoubtedly present in this instance, death frequently ensues suddenly, mostly through paralysis of that organ. In the case before us the result of the post-mortem examination clearly points to the lungs as the immediate source of death, and the question will suggest itself, in what mode the above described condition of the heart could have caused sudden death by the lungs.

An extremely weak condition of the heart will, through the imperfect emptying of the left ventricle, act in a manner similar to constriction of the aortic orifice, as a mechanical obstacle to the efflux of blood from the left auricle and the pulmonary veins, and so become a cause of the accumulation of venous blood in the lungs. In addition, the inefficient contraction of the right ventricle affords a slighter pressure of blood, which is scarcely capable of being propagated through the capillary system, so that the *vis a tergo*, contributing to the emptying of the pulmonary veins, which is never very considerable, must in this case be entirely absent. If we now further consider that in general weakness of the heart, the sucking power of the diastole will have almost disappeared, it follows that the emptying of the pulmonary veins was effected in the above case,

almost exclusively through the inspiratory movements, and that the derangement and partial obstruction thereof caused by the rapidity and exertion of the race, the subsequent fall, and the pressure on the chest, may have induced sudden death by the lungs.—Virchow's *Archiv*, Bd. xi. Heft 2, 1857, p. 181.

Case of Acute Phosphorus-Poisoning, observed in the Second Division of the Imperial and Royal Garrison Hospital. By Dr. TH. NITSCHE.

NOTWITHSTANDING the many deficiencies in the observation of the case I am about to describe, and particularly in that part relating to the chemical investigations, which, on account of the multiplicity of business, can never be carried out in a large hospital with the detail and precision attainable in a clinique or in the laboratory,—I feel myself particularly induced to publish it, because in the first place both the phenomena during life and those observed in the dead body were accurately noted; and secondly, because it has occasionally happened during the last few years that portions of the bodies and of the contents of the stomach and bowels of individuals who had died in consequence of poisoning by phosphorus have been sent here for chemical examination by courts of inquest, without any accurate account of the phenomena observed at the sick-bed and at the autopsy being at the same time given; and lastly, because even in the present day and in the special manuals upon the subject of poisoning, such erroneous views are entertained as to the effects of phosphorus, that the communication of a well-established case of poisoning by that agent cannot be entirely devoid of interest.

Ant. H., a private soldier of the 42nd regiment of infantry of the line, and servant of one of the principal generals, was brought in the afternoon of the 21st of May in last year, without any particular information as to his case, from the transport-house to the second division of the principal garrison hospital of this place, where at the visit he complained only of depression, nausea, and headach. As a closer examination of the patient and of his objective symptoms showed nothing further than a rather increased frequency of the pulse, a furred tongue, a somewhat elevated temperature of the head, and brighter appearance of the cornea, while auscultation and percussion revealed merely a slight extension of dulness in the region of the liver, something indifferent was prescribed, until at the end of the visit I learned from the physician of the transport-house, who had arrived in the meantime, that the man had on the preceding evening swallowed tops of phosphorus matches, which were found in great quantity in what he had thrown up in the transport-house. On being now more closely questioned, the man confessed that on account of an affair with the housemaid which had brought on him the disapproval of his master, he was about to return to the ordinary troop service with his regiment not in garrison at Vienna, and had consequently determined from grief to put an end to his life; this he

attempted to do on the 19th of May first with quicksilver, by swallowing the entire quantity he got out of a barometer. But as this passed quickly through the intestinal tract, he had recourse to another means of attaining his object, namely, phosphorus. According to his statement he swallowed on the evening of the 20th the heads of six packets of ordinary matches, and was in about three hours after attacked with violent vomiting, which had returned so frequently that he could not state how often he had thrown up. He also corroborated the statement already made, that the vomited matters contained a large quantity of match-tops.

It only remains to mention that he was a very strongly built man, aged twenty-one, who had always enjoyed good health, and that the headach was the symptom of which he complained most. He was now ordered, with a view of removing any of the phosphorus matches which might remain in the stomach, an emetic of tartarized antimony and ipecacuanha; cold applications to the head, and magnesia milk, the latter to be taken in as large quantity as possible so soon as the effect of the emetic commenced, were also prescribed. The result was that he vomited about three and a half quarts of a greenish turbid fluid, the sediment of which consisted of mucous flakes, the remains of undigested food, and a few of the match-tops. The fluid itself, however, yielded no odour of phosphorus.

On the morning of the following day, that is on the 22nd, the symptoms had but little changed, the headach was less, the pulse 92, the face was rather flushed, the abdominal parietes were distended, the abdomen was otherwise empty, there was only slight tenderness on pressure in the epigastric region; still the patient complained of commencing pains in both hypochondria. The magnesia milk was continued.

In the afternoon the congestion of the face had increased, as had also the pains in the hypochondria, of which, as well as of burning thirst and dryness in the mouth and palate, the patient chiefly complained. The headach had entirely disappeared. The urine was intensely red and rather frothy; the chief result of its examination, in addition to a slight increase of the specific gravity, was the discovery of the presence of albumen and of exudation cylinders; the colouring matters of the urine were moreover increased, as were the sulphates and phosphates; the chlorides on the contrary were diminished; yet as these estimations were made only by the eye, as is usually done at the bedside, they have but a doubtful value. This state of the urine continued during the whole course of the illness.

On the morning of the 23rd, that is, on the third day after the poison was taken, the thirst and dryness of the mouth, but especially the pains in hypochondria, had increased, to which were added stinging pains in the chest. The congestion of the face was also greater, the tenderness in the epigastrium was more considerable, and the tympanitic sound in the same region was extended over a larger surface. Bearing in mind the general opinion as to the effect of phosphorus upon the stomach, and inferring from the symptoms which

have just been described that gastritis was setting in, leeches and poultices of ice were ordered, together with the internal use of ice, the latter partly with a view of allaying the tormenting thirst. The magnesia milk was also continued.

In the afternoon of the same day the phenomena had not changed, except that the congestion of the face had assumed a peculiar bluish-red colour, from which, however, the middle of the face was perfectly free through a breadth of about an inch, which, as the bluish-red colour of the entire of the rest of the face was abruptly bounded by this colourless band, drawn as it were from the highest point of the forehead to the chin, gave to the physiognomy a peculiar appearance I have never before observed. On this afternoon an enema was prescribed, as the patient had not been at stool since he swallowed the matches; this produced a copious, pultaceous, yellowish-brown motion, free from any odour of phosphorus. The chemical examination of the evacuation was prevented through the negligence of the attendant.

On the morning of the 24th, that is, on the fourth day after the poisoning, the pains in the hypochondria had somewhat remitted; those in the chest, on the contrary, had increased to an intolerable degree, without, however, the physical examination of the thoracic organs indicating any material change, except that the respiratory murmur was more sharply vesicular. The bluish-red colour of the face had changed into a perfectly cyanotic hue; the middle line, however, remaining free from colour, as above described. The pain in the epigastric region had entirely ceased. The patient perspired very profusely, and his perspiration had such an intensely peculiar phosphoric odour, that one got quite a puff, as the saying is, when the clothes were raised; his breath, on the contrary, was quite free from smell. A peculiar phenomenon was the loss of the power of vision, which was now setting in. Thus the patient, who was otherwise perfectly conscious, stated, that in the horizontal position he had only a faint perception of light, but that when he rose he did not see at all; at the same time he complained of shooting pains in the eyeball. The pupil was so much dilated that of the iris only a slender ring was visible, which did not in the least react on the light. The pulse was 100, but was tolerably full and strong.

In the afternoon the pulse had risen to 140, and had become small and weak; the sense of hearing was blunted; the perspiration continued excessive, and its odour was more intense than in the morning; the extremities were cool; the second sound was no longer to be heard in the heart or great vessels; the patient retained perfect consciousness, and complained only of extremely violent pain in the chest. He died quite quietly at 7 o'clock in the evening.

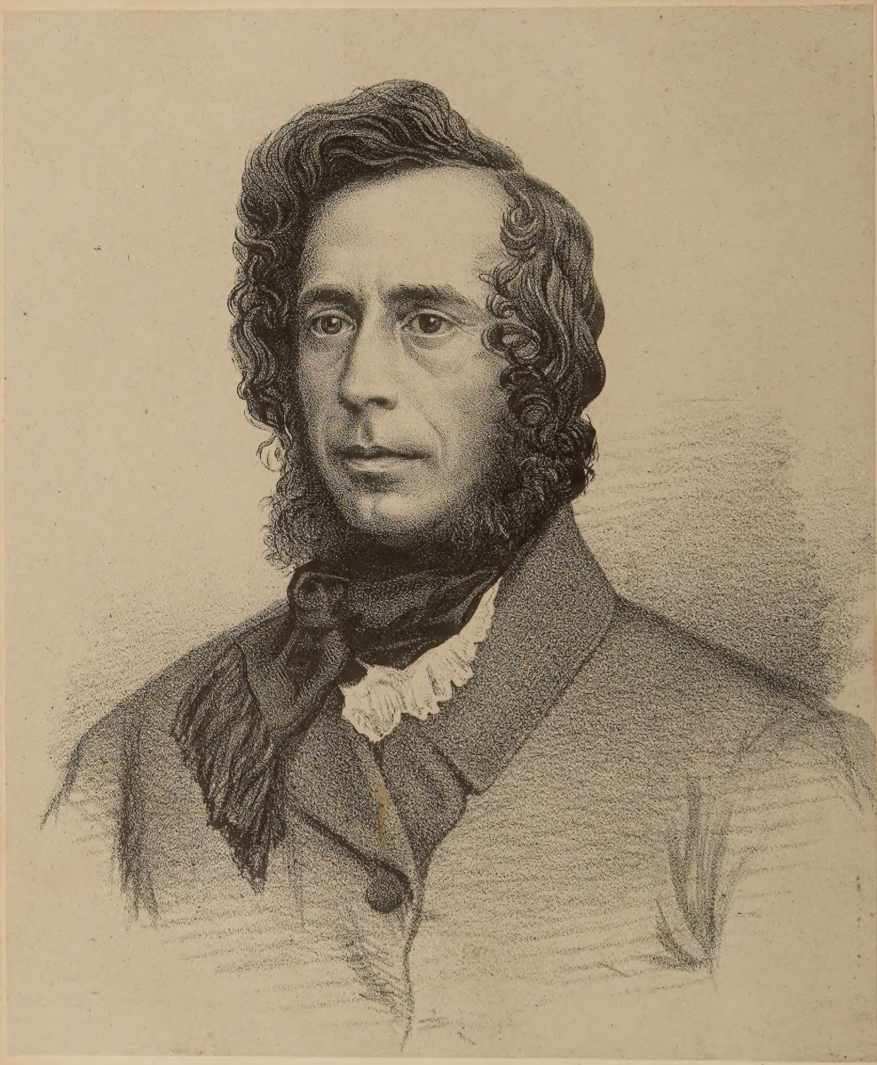
The post-mortem examination, which took place on the morning of the 26th, afforded the following results:—The brain was pale, ex-sanguine, and somewhat softer than usual; in the ventricles was a very small quantity of serum; the sinuses were distended with dark semifluid blood; in the mediastinal and in the subpleural

areolar tissue were extensive ecchymoses, as was the case also in most of the layers of areolar tissue. The lungs were of a dark red colour, containing in the lower lobes on both sides much bloody serum; on the upper surface were numerous ecchymoses, and in the right lung were several patches of sanguineous congestion; in the pericardium was a little reddish-coloured serum; the heart was flaccid; the left ventricle was empty; the right as well as the large venous trunks contained much dark blood, partly in the state of a loose coagulum, and partly fluid; the liver was somewhat enlarged, fatty and completely exsanguine; in the stomach there was some greenish fluid mixed with white flakes; the mucous membrane was slightly turgid, much viscid mucus was adherent to it, only at the base of the stomach was it rather hyperemic, elsewhere it was quite normal; the mucous membrane of the œsophagus and pharynx was in a perfectly normal condition; in the duodenum it was circumstanced as in the stomach; along the course of the intestinal canal there were in several parts tolerably extensive ecchymoses in the subperitoneal areolar tissue; there was nothing abnormal in the small and large intestines; both contained a considerable quantity of yellow fæcal matter; the spleen was void of blood; the cortical substance of the kidneys was slightly granular; the Malphigian bodies were very beautifully seen, even with the naked eye, as red points. Microscopic examination showed injection of the Malphigian tufts and exudation plugs in the tubuli uriniferi. In the submucous areolar tissue of the calices and pelves of the kidneys were scattered ecchymoses; the urinary bladder was contracted, and contained a little turbid urine. The stomach and a considerable portion of the intestinal canal, with their contents, were examined in the chemical laboratory of the Imperial and Royal Academy of Joseph, but no phosphorus was found. It should also be observed that no smell of phosphorus was perceived in the dead body, and that no phosphorescence was seen either during life or after death.

The most important results of this examination accordingly are, on the positive side, the indications of universal decomposition of the blood, and, of incipient Bright's inflammation of the kidneys; on the negative, the absence of any disease of the stomach. It would, therefore, appear, according to this case, that phosphorus does not, at least always, if in general, as has hitherto been almost universally believed, act as a local poison, since neither during life were any evident symptoms of gastritis or gastro-enteritis observed, nor after death were any signs of inflammation, corrosion, ulceration, gangrene, &c., present in the pharynx and œsophagus, or in the stomach and intestinal canal, appearances which have been described in almost all the manuals as belonging to the post-mortem examination of those who have died from acute phosphorismus. The effect of phosphorus is rather, it would appear from the case I have communicated, general or constitutional, that is, it is taken, most probably in some organic combination, into the blood, the change in which fluid thus produced gives rise to an alteration of the brain and

nervous system, and with this view both the post-mortem appearances and the symptoms observed at the bedside are consistent, viz., the violent pains in the hypochondria, chest, and lastly also in the globe of the eye, caused by no material change, and therefore to be called nervous; the gradual supervention of paralytic phenomena commencing with the sense of vision, and finally the excretion of phosphuretted substances with the perspiration. I think it also necessary to point attention to the state of the kidneys, as the signs of commencing Bright's inflammation found in them, corresponding to the presence of albumen during life, can scarcely be attributed to the existence of renal disease prior to the poisoning, against which is the evidence of the constantly excellent health of the patient; it is, on the contrary, extremely probable that these may have been an immediate consequence of the poisoning, which appears to me so much the more credible, as I have lately been informed, on good authority, that a similar change in the kidneys has already been found in many individuals who have died of poisoning by so-called acrid poisons, which is also explicable when we consider that the kidneys must certainly be brought into co-operation in the increased metamorphosis of tissue necessary for the elimination of an injurious substance from the system.

As to the space of time within which the fatal result of the poisoning occurred, this appears to be rather long compared to other cases on record, namely somewhat over four days; the long duration of the illness can, however, be accounted for, if we bear in mind that the patient rejected a great quantity of the matches by vomiting, that consequently but few of them may have remained in the stomach, and that he took the phosphorus in a solid form, and in an envelope of gum, as it occurs in the tops of phosphorus matches; the same circumstances will explain the fact that no phosphorus could be chemically demonstrated in the body, as has been possible in other cases, as, on the one hand, almost all the phosphorus present in the stomach may have been partly absorbed and partly oxydized within four days; and, on the other hand, even if small quantities may have remained after the death of the individual, these may have been oxydized in the interval between death and the occurrence of the analysis, and during manipulation in the autopsy and analysis, although I believe that at the time the dissection took place there was no longer any phosphorus in the body, as there was no trace of any smell of it. The case I have related would further go to prove that, as has been stated, phosphorus produces death even in very small doses. It lastly remains to mention that the present case afforded no evidence of the excitant action of phosphorus, especially of irritation of the genital system with erections, priapism, strangury, &c., as these have been described in various works.—*Wochenblatt der Zeitschrift der k. k. Gesellschaft der Aerzte zu Wien*, February 9, 1857, p. 97.



Yours
Most faithfully
Wm. L. M. Whitaker